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# ON TEACHING PUBLIC FINANCE

*By* URSULA K. HICKS

WITHIN the last 25 years four events have given the approach to public finance an entirely new look: first, the enormous growth of public sectors; second, the introduction of macro-analysis; third, the use of social accounting techniques for purposes of economic policy; and, finally, the obligation to gear public policy so as to maintain full-capacity usage leading to a steady process of growth. Gone are the days when the teaching of public finance could concentrate on limited welfare questions, such as minimum aggregate sacrifice versus equi-marginal sacrifice. Indeed, public finance has ceased to have the negative objective of minimizing the taxpayer's discomfort: it emerged from the Second World War as a major—perhaps the major—instrument of policy. All this makes it a much more exciting subject both for students and teachers; but it poses for the teacher some very awkward problems of scope, method, and arrangement.

In these circumstances the appearance of two large and important books[1] on modern public finance within a few months of each other is a considerable event. Both are by experienced teachers and addressed primarily to students. Inevitably a number of the same subjects are treated, and since both authors display cautious well-balanced judgement their conclusions (even on controversial subjects such as the incidence of profits tax) are often identical. Yet the two books are in fact very different. This can easily be seen if we provide the authors with alternative titles: for Professor Musgrave, *A Study of Budgetary Finance, with Special Reference to the U.S.A.*, and for Dr. Prest, *British Taxes* (*positive and negative*) *in Theory and Practice*. Since this is not a review, I shall only incidentally be concerned with particular points, but will concentrate on questions of scope, method, and terminology.

There are today two basic difficulties in organizing a course on public finance (including 'fiscal policy', which we may define as concerned with the macro aspects of the subject). The first is due to the large corpus of theory developed over recent decades which contains a large number of theorems basic to a real understanding of practical problems, but which presupposes a substantial training in general economics both at the micro- and at the macro-level. This would include the theory of general equilibrium, the theory of fluctuations, the theory of the firm, and of welfare economics. Although these can be presented in a simple form which can be

[1] *The Theory of Public Finance*, by R. A. Musgrave, 628 pp., McGraw Hill, New York, and *Public Finance in Theory and Practice*, by A. R. Prest, 408 pp., Weidenfeld & Nicholson, London.

grasped by any diligent student they are also capable of great refinement and of treatment by modern mathematical methods, which will appeal especially to eager graduate students. Public finance problems can thus be fruitfully analysed at two distinct levels, and this in itself creates awkward problems of exposition and balance.

It is clear that Professor Musgrave is much more interested in the higher levels of analysis. His work proceeds from model to model, each with appropriately varied assumptions. This should be immensely stimulating to good students, although it could be wished that Professor Musgrave had left more of the working out for the students themselves, as an educational exercise. On the other hand, a good deal of Professor Musgrave's exposition is at a quite elementary level, so that the student's mind has to jump up and down, and it is not always clear on what level the argument is proceeding. This dual approach may also be partly responsible for the many errors (some of which are far more serious than mere typographical mistakes), which do rather considerably mar the book. At the other extreme, Dr. Prest never takes his feet off the ground. There is no part of the book which should give trouble to a student of even moderate ability. The analysis is lavishly illustrated by simple arithmetical examples, and supplied at every turn with signposts. The figures are taken straight from the best-known sources, and subjected to practically no processing. (In this form the student could have well looked them up himself and would then probably have remembered them better.) On the other hand, it must not be overlooked that some of the analysis looks disarmingly simple because Dr. Prest's exposition is so clear, and not necessarily because the subject-matter is simple.

The second basic problem for the teacher is that of inclusiveness. Fiscal policy is central to economic decisions in the public sector, whether concerned with stability or growth. By its nature it is closely related to questions of welfare, of income distribution, of the balance of payments, and, above all, to the field of its fellow, monetary and credit policy. These clearly cannot all be accommodated in a course on public finance: but where are the limits to be drawn? At one extreme Dr. Prest sternly averts his eyes from anything peripheral. Every time we come to anything that even remotely smells of politics, international trade, general welfare considerations, or monetary policy we are warned away. Professor Musgrave goes a long way in the opposite direction. It is true that problems of international balance receive virtually no attention, but this probably represents American interests rather than any desire to limit the scope of the subject. Very soon after the beginning we encounter a long and interesting (although perhaps in the end somewhat unnecessarily defeatist) section on the satisfaction of public wants. Monetary policy and its relation with

fiscal policy receive nearly 100 pages of analysis and threaten to upset the balance of the book. Once embarked on the sea of liquidity and the debt it was evidently hard to make the shore again.

Sticking to one's last is often excellent advice, and many students will no doubt be relieved to have their subject so neatly circumscribed as it is by Dr. Prest. But for others (and by no means the worst) it is the interconnexion of policies and their philosophical base which constitute the main interest. If students are not encouraged to think such things out at the university stage their judgements are likely to be more superficial in after life.

It follows from the central position of the fiscal instrument that every teacher has to think very hard about the arrangement and division of his subject. Whatever way he turns he will find himself faced with problems of overlap and repetition, simply because (for instance) the economic consequences of tax changes have many facets. In order to simplify this problem Professor Musgrave has a separate treatment for two distinct types of economy: the classical, which is inherently self-righting, and the 'compensatory' which typically does not compensate itself and has to be led back to equilibrium. In fact the analysis of the classical economy is much the most interesting and original; Professor Musgrave has an extraordinary breadth of knowledge of history of theory. There are, however, two troubles about this attempted division. If one sticks closely to the formal classical assumption of atomistic perfect competition the field of analysis is limited and rather dull. In fact the classical economists (no doubt failing to realize that they were the classics) just wrote about things as they saw them, and were much less purist than the modern constructor of classical models. Secondly, and partly because of this, partly because a number of problems in the field do not differ fundamentally whatever (moderate) assumptions are made about the type of competition, Professor Musgrave's classical analysis keeps on jumping out of its framework and showing an interest in topical problems. This implies that the student must watch very carefully indeed what precise assumptions he is working with; it is easy to jump to inconsistent conclusions. (Dr. Prest is too closely tied to the contemporary British world to get landed in any of these troubles.)

The next question for the teacher is the division of his subject for expositional purposes. Each of our authors favours a trisection. Dr. Prest's three heads are: allocation of existing resources, supply of resources, and income 'correction' (by which we mean redistribution). In order to obtain a quite general measuring rod Dr. Prest works (especially in the section on allocation of existing resources) with the device of measuring each tax against a flat poll tax. This procedure has been used before, but the degree

of abstraction required makes it a not very satisfactory device. It is a relief when at a later stage we are allowed to compare one real tax with another. There is little difficulty about this since for analytical purposes, tax formulae can be defined as precisely and arbitrarily as desired. In the section on income correction Dr. Prest is concerned with two quite separate topics: on the one hand, with the distribution of personal incomes by brackets, on the other, with compensatory finance. The latter is approached both from the expenditure (public works) side and from the tax side (largely in terms of built-in stabilizers). One difficulty which runs through this trisection is that changes in the allocation of existing resources normally lead to changes in the supply of resources, so that they cannot very satisfactorily be discussed in separate compartments. Had Dr. Prest not been too cautious to venture on any discussion of optimal allocation as a whole (and of products as well as factors, on Samuelsonian lines) this difficulty would have become more obvious.

Professor Musgrave's leading trisection appears in his analysis of budgetary functions, described as the allocation of resources, distribution of income, and economic stabilization. (These sound very like Dr. Prest's classification, but to Professor Musgrave, 'allocation' is not a matter of the allocation of resources *in* the economy as a whole, but merely *to* the public sector, and could effectively be glossed as 'procurement'.) The interest of Professor Musgrave's approach, however, lies less in the arrangement of his subject than in his concept of three separate budgets, each of which is conceived of as being planned in a self-regarding manner under the assumption that the others have fulfilled their targets and responsibilities. In normally good times the distribution budget would be the key operator, deriving its policy straight from the democratic process. The stabilization budget would not necessarily have anything to do and would come into action only when events failed to produce full employment at more or less stable prices. It follows logically that it must not upset the income distribution attained by the distribution budget. Hence, if faced with the problem of unemployed resources, it must operate only with carefully chosen subsidies that are distributionally neutral. It would be more plausible (and more in accordance with what has actually occurred in the U.S.), that when the stabilization budget comes into play it should take over control and make use of the whole gamut of reflationary measures. In fact desired income distribution will already have been upset by the depression.

Income redistribution and stabilization of the level of activity are clearly two of the most important objectives of the modern budget on the economic side (the British budget also has vital political and control functions to perform which complicate the issue, but these are much less important in

the U.S.). It is consequently desirable to distinguish the two objectives clearly. On the other hand, procurement (choice of taxes or of taxes versus borrowing) is inextricably bound up with these functions and it is doubtfully useful to distinguish it separately. On the wider plane, moreover, it is to the combined effects of all budgetary activity that both the individual and the level of activity in the economy react. Unified policy calls for unified budgetary direction, so that in the last analysis there must be one, not three self regarding, budgets. This would seem to be true even in the U.S. with its very limited practice of a unified policy.

The business of public expenditure (and of the taxes to finance it) is to satisfy wants, which either cannot or will not be satisfied by private enterprise in sufficient quality or quantity to satisfy public opinion. These wants are of two types. In the first group are those which must be financed by public moneys because the satisfactions provided are unallocable (or unallocatable as Dr. Prest unhappily terms it) between individuals. In the second group are those services whose benefits could be allocated, and where consequently fees or prices could be charged; but in order to make the provision of services attractive to private enterprise fees would have to be higher and consequently usage more limited than is thought desirable. Into this group fall most of the social services. Thus we have a clear functional distinction between allocable and unallocable services. But in respect of their finance there is no clear distinction, since the choice of method depends on policy.

Professor Musgrave makes no use of this obvious distinction between services, but classifies wants into two groups which he calls respectively *social* wants and *merit* wants. Social wants are defined as including services which are consumed by all equally; merit wants as those which are recognized as being of national importance, but which by their very nature cause interference with consumers' preferences. This classification soon runs into trouble. Social wants (virtually synonymous with unallocable services) are not in fact equally consumed by all; even the opportunities for equal consumption are not always available (farmers make relatively little use of police services). Again, these services may just as well interfere with consumers' preferences as those provided to meet merit wants (as defence for unilateralists). They may interfere even more directly than, for instance, the provision of education. In fact in one passage Professor Musgrave seems to be on the point of moving education into the social want group, thus suggesting that he is himself not quite happy with his classification.

Basic to any work on public finance is the set up for analysing the economic working of taxes. As a preliminary aid to this a classification of taxes that has economic significance is surely an advantage, and here again there

is an obvious logical distinction: between those taxes where individual liability depends on the taxpayer's economic position (his income, wealth, and so on), and those taxes where liability depends only on the consumption of particular taxed articles or services, and is unrelated to the taxpayer's economic position. Dr. Prest avoids the question of tax classification by adopting the traditional British distinction between direct and indirect taxes, based only on the point of contact between the revenue authorities and some administrative concept of a taxpayer. He gets away with this because he is only very slightly concerned with analysis outside a narrow range of taxes on income and capital.

Professor Musgrave realizes the need for some such classification as that suggested above, but is content with the classification of taxes on the one side of income (and its extensions), on the other of consumption. This is all right until his consumption taxes blossom into a general tax on consumption. In fact the Kaldorian expenditure tax clearly belongs in the first category because liability depends not on the purchase of taxed goods and services but on total outlay on consumption (or as some would say, on a more appropriate definition of income than incomings). Considered in this way Hobbes and earlier writers who supported taxes on outlay mainly because they doubted the potential equity of income tax administration, cannot plausibly be claimed as precursors of Mr. Kaldor or Professor Vickrey.

The process of tax analysis further calls for decisions both in respect of terminology and on the scope of the process to be analysed. Here again Dr. Prest is an arch conservative, harking back to the Seligman concept of shifting as indicated by price changes, thus neglecting the many other means which producers have of reacting to a tax change which reveals an elastic demand. In these days of administered prices and all that they imply analysis along the lines of the 1890's just doesn't take one far enough. Professor Musgrave has given a great deal of thought to all this. The analysis here presented is a great advance in clarity and simplicity on his well-known article 'On Incidence'.[1] He now distinguishes two fundamental meanings of incidence: in the narrow sense of the *change in the distribution of incomes by size bracket* as a result of a tax or expenditure change, and in the wide sense of the *complete economic effects consequential on the change.* The importance of this distinction is twofold. Incidence in the narrow sense can be statistically estimated (it appears to be very close to my concept of formal incidence).[2] Incidence in the wide sense embraces the whole process of consumer adjustments, entrepreneurial reaction and factor

[1] *Journal of Political Economy*, 1953.

[2] See 'The Terminology of Tax Analysis', *Economic Journal*, 1946. Reprinted in *Readings in the Economics of Taxation*, 1959. My concept is I think somewhat wider since it would also cover functional changes in income distribution, i.e. between wages and profits.

reallocation. (In other words it corresponds to my effective incidence.) Only by looking at the whole process can we be certain of not overlooking important side effects.

The concept of equity in taxation is a nettle which must be grasped for any balanced judgement—especially on questions related to the adoption of new taxes. There are two basic aspects of equity, *vertical* (in relation to incomes of different sizes), and *horizontal* (concerned with the equal treatment of equals). In post-war Britain there has been a noticeable tendency to give more weight to the vertical (welfare) aspect; a tax was considered equitable according as it was progressive or not. But even in the welfare field there are other considerations beside income distribution: the injustice of making people who have particular tastes and harmless indulgences such as smoking (I speak as a non-smoker), pay extortionate sums in order to satisfy their tastes, while those with other tastes, such as drinking tea and reading novels, can indulge them tax free.

It is time that horizontal equity came back into its own, and it is therefore refreshing to see that both our authors give a great deal of weight to it. Horizontal inequity may arise from several causes, which need to be distinguished, since the solutions are different. In the small there may be inequities in tax formulae due to historical accident or change in social conditions. The Royal Commission on the Taxation of Profits and Income uncovered many such (for instance, that clergy of the Church of England were charged income tax on their official residences while Free Church ministers were not). Once noticed these can be simply set right by legislation. More important has been the effect in the post-war period of the difference in treatment of expense allowances in Schedule D (profits and professional earnings) and Schedule E (earnings under a contract of services). The increased importance of this difference is due, on the one hand, to the greater propensity of firms to give expense allowances partly as an offer of tax avoidance, but partly to promote sales in a highly competitive world, and, on the other, in an increase in the proportion of professionals working under contracts of service. This inequity is gradually being set right by the grant of further expense allowances under Schedule E while at the same time tightening up those given under Schedule D. A further type of horizontal inequity arises from the fact that some occupations offer greater opportunities for tax avoidance than others. In the higher income brackets this mainly comes through the substitution of tax free capital gains for taxable income; in the lower brackets by increasing the amount of paid work done after normal working hours which consequently falls outside the P.A.Y.E. system and which (in the absence of returns of income) is untraceable by the Inland Revenue. It must be noted that since the war the steady rise in security values as prices gradually became adjusted to

post-war levels has given exceptional and probably temporary facilities for the former, while the latter is a child of the full employment situation.

Professor Musgrave starts off his discussion of equity with the horizontal variety, which is no doubt more generally considered in the U.S. than vertical equity (the statistics of income distribution being very sketchy). He almost has to persuade his readers that vertical equity is also important: for he is at pains to point out that the concept of equal treatment of equals presupposes a concept of unequal treatment. He then proceeds to an illuminating discussion of whether an index of equality is more properly to be sought on the consumption (outgoings) side or on the receipts (incomings) side. He makes the point that the use of consumption as an equality index really derives from capital theory: this is true of all definitions of income in terms of residual capacity. On the other hand, it is noticeable that accepted definitions of equality for tax purposes have all tended to run in terms of incomings (suitably adjusted for costs and responsibilities). This suggests that the incomings index is generally regarded as the more fundamental.

For Dr. Prest horizontal inequity almost entirely depends on what he apparently believes to be the enormous volume of income tax, and especially surtax, avoidance. His statement that 'tax avoidance has become a major national industry' echoes Dr. Little's description of surtax as a 'purely optional levy'. Such exaggerated statements do not really contribute towards a constructive solution. Dr. Prest is indeed very likely correct in asserting that the ratio of true to assessable income has risen as compared with the pre-war situation: but to this many causes have contributed. Nevertheless, in spite of his obsession with tax avoidance it is interesting to find that Dr. Prest does not favour the introduction in the U.K. of a tax on capital gains. Instead he puts his money on an annual tax on wealth, which is one (it will be remembered) that Mr. Kaldor specifically did *not* favour as regards this country. This suggestion brings out a further question of horizontal equity, concerned with the administrative equity of a tax as a whole. It is generally agreed by those who live in countries where a wealth tax is in operation that administrative difficulties (mainly concerned with the differing amenability to valuation of various forms of property) prevent the tax from having a high degree of equity. The same argument applies *a fortiori* to a Kaldorian expenditure tax.

Finally, a word as to method. There seem to be two possible approaches here: either taxes (expenditures) can be compared functionally, according to their several effects on the propensity to work or to save, on the level of activity, or other qualities. (This Dr. Prest describes as the horizontal approach.) Alternatively, a tax can be taken as an entity and its various good and bad points discussed, with varying assumptions as to its precise

formula and relation to other parts of the tax structure. Both authors concentrate most of their discussion on the functional approach. When the subject under discussion is of major and central interest the result can be very illuminating. Of such is Professor Musgrave's discussion of 'adjustments in work effort' (personal incentive), here among a number of good points often overlooked, he brings out the smaller disincentive effect in the higher income brackets due to the decline in the proportion of income derived from work as income rises.

When the discussion is concerned with less central issues, however, a concentration on the functional approach makes it laborious to achieve any view of a tax in the round, including both its direct and side effects, in different fields. And policy decisions are after all concerned with the combined effects of a tax, not with its excellence in this or that direction. The horizontal approach presents fewer difficulties in Dr. Prest's analysis, partly because his field is narrower, so that there are not nearly so many hares to chase, but partly because in the last section of the book he goes over to the alternative approach and provides portraits of a few individual taxes: income and profits taxes, and the taxation of capital gains. In this section Dr. Prest makes good use of the reports of the Royal Commission, but, as his own previously published articles bear witness, he has thought widely on these subjects. Altogether these chapters are among the best in the book.

Whatever one's feelings about particular approaches and methods, there can be no question but that both of these books are most welcome additions to the modern literature on public finance. For the student Dr. Prest's balanced discussion of topical questions will be found a very ready help in essay writing. But it is for the teacher that Professor Musgrave's book will probably be most stimulating. Hereafter there will be no excuse for public finance courses that are dry or limited in scope; Professor Musgrave has demonstrated that this part of the dismal science can be fully as exciting as any other.

Oxford.

# DIRECT ADDITIVITY AND CONSUMERS' BEHAVIOUR

*By* H. A. JOHN GREEN

**1.** The purpose of this note is to re-examine an argument presented by Professor Hicks[1] concerning the implications for a consumer's behaviour of the hypothesis of 'independent utilities' or 'additive preferences', which has recently received attention from economists.[2] It is convenient to distinguish two forms of this hypothesis. 'Direct additivity' means that it is possible to write the utility function $u(x_1, x_2, ..., x_n)$ in the form:

$$u = f_1(x_1) + f_2(x_2) + ... + f_n(x_n), \tag{1}$$

where $x_1, x_2, ..., x_n$ are quantities of commodities consumed. It can be shown that direct additivity is equivalent to the property that the marginal rate of substitution between any two goods is independent of the quantity of any third commodity consumed.[3] 'Indirect additivity' means that it is possible to write:

$$u = g_1\left(\frac{M}{p_1}\right) + g_2\left(\frac{M}{p_2}\right) + ... + g_n\left(\frac{M}{p_n}\right), \tag{2}$$

where $M$ is income, $p_1, p_2, ..., p_n$ are prices, and $u$ is the maximum utility obtainable subject to $\sum p_i x_i \leqslant M$. It can be shown that indirect additivity is equivalent to the property that the ratio of the quantities of any two commodities consumed, $x_i$ and $x_j$, depends only on $M/p_i$ and $M/p_j$, the quantities of $x_i$ and $x_j$ that could be purchased if the entire income were spent either on one or on the other.[4]

These interpretations of direct and indirect additivity, while perhaps of some interest, do not lead directly to econometric tests of the hypotheses.

[1] J. R. Hicks, *A Revision of Demand Theory*, Oxford, 1956, p. 10.

[2] See, for example, H. S. Houthakker, 'Additive Preferences', *Econometrica*, Apr. 1960, pp. 244–57. The definitions of direct and indirect additivity given in this paragraph are taken from Houthakker's paper.

[3] It is clear from (1) that direct additivity implies this property of marginal rates of substitution. The converse is a consequence of the important theorem (see Nataf, *Econometrica*, 1948, pp. 239–41, and Leontief, *Bulletin of the American Mathematical Society*, 1947, pp. 343–50) that if, for a function $F$ (of more than two variables), the ratio of the partial derivatives of $F$ with respect to any two independent variables depends on the values of those two variables alone, then $F$ can be written as *a function of* an additive function of the form (1). In the case of a utility function, the form (1) can legitimately and conveniently be adopted as the function itself.

[4] The argument of the preceding footnote implies that indirect additivity is equivalent to the property that:

$$\frac{\partial u}{\partial(M/p_i)} \div \frac{\partial u}{\partial(M/p_j)} = f_{ij}\left(\frac{M}{p_i}, \frac{M}{p_j}\right);$$

when utility is maximized, the left-hand side of this equation is equal to $x_i \div x_j$.

Professor Houthakker,[1] Professor Samuelson,[2] and Mr. Gorman[3] have made contributions which will facilitate such tests; Professor Hicks's argument, referred to above and discussed at length below, leads to the conclusion that the hypothesis of direct additivity is unrealistic. It is the purpose of this note not to dispute this conclusion, but to state more completely the grounds on which it may be based.

**2.** Professor Hicks,[4] assuming a utility function of the form (1) above, points out that in equilibrium the marginal utility of each commodity is equal to its price multiplied by the marginal utility of money. When the price of one commodity, $X$, falls, the marginal utility of money must, unless the price-elasticity of demand for $X$ is equal to unity, be adjusted to restore equilibrium. The quantities purchased of commodities other than $X$ must be adjusted so as to equate their marginal utilities to their unchanged prices multiplied by the new marginal utility of money. Professor Hicks concludes: 'If [the marginal utility of money] is adjusted upwards, the demands for *all* commodities other than $X$ will tend to contract. If the adjustment is downwards, the demands for *all* commodities other than $X$ will tend to expand.'

This conclusion clearly depends on the assumption that the marginal utility of each commodity declines as the quantity consumed increases. This assumption is questionable; it is not required by the Hicksian stability conditions. We shall now examine the implications of these conditions for the behaviour of a consumer whose utility function can be written in the form (1).[5]

**3.** Consider the Hicksian determinant derived from (1):[6]

$$U = \begin{vmatrix} 0 & u_1 & u_2 & . & . & u_n \\ u_1 & u_{11} & 0 & . & . & 0 \\ u_2 & 0 & u_{22} & . & . & 0 \\ . & . & . & . & . & . \\ u_n & 0 & 0 & . & . & u_{nn} \end{vmatrix}, \tag{3}$$

where $u_i = \partial u/\partial x_i$, $u_{ij} = \partial^2 u/\partial x_i \partial x_j$. The implication of (1) is of course that all cross-derivatives (i.e. elements of the form $u_{ij}$ with $i \neq j$) vanish. The stability conditions are that all principal minors of $U$ of orders 3, 4,

[1] Op. cit.

[2] In an unpublished paper of which I have been privileged to see a copy.

[3] 'Additive Preferences and Homogeneity', *University of Birmingham, Faculty of Commerce and Social Science Discussion Papers*, Series A, No. 18, Aug. 1960.

[4] Loc. cit.

[5] Cf. E. Slutsky, 'On the Theory of the Budget of the Consumer', reprinted in American Economic Association, *Readings in Price Theory*, Homewood, Illinois, 1952, pp. 27–56, especially pp. 45–47.

[6] On the argument of this section see J. R. Hicks, *Value and Capital*, 2nd edition, Oxford, 1946, pp. 306 ff.

5,..., be alternately positive and negative. All restrictions on the signs of elements of $U$ of the form $u_{ii}$ can be obtained by considering principal minors of order 3. The conditions are:

$$\text{For all } i \text{ and } j, \qquad u_i^2 u_{jj} + u_j^2 u_{ii} < 0. \tag{4}$$

This does not imply that all $u_{ii}$ are negative, but only that at least $(n-1)$ such terms are negative. Either all are negative or exactly one is non-negative.[1]

A further implication of the stability conditions is that the determinant $U$ itself has the sign of $(-1)^n$.

Let us consider first the response of the demand for a commodity to a change in income alone. A commodity $x_i$ will be said to be 'normal' if $\partial x_i/\partial M > 0$, 'inferior' if $\partial x_i/\partial M < 0$, and 'neutral' if $\partial x_i/\partial M = 0$. The sign of $\partial x_i/\partial M$ is the same as the sign of $U_i/U$, where $U_i$ is the co-factor of the element $u_i$ in $U$. In the present case we have:

$$\frac{U_i}{U} = -\frac{u_i \prod_{k \neq i} u_{kk}}{U}. \tag{5}$$

We consider in turn the two possible cases:

(*a*) $u_{ii} < 0$ for all $i$. Then the sign of the product term $\prod_{k \neq i} u_{kk}$ in (5) is the sign of $(-1)^{n-1}$, which is the reverse of the sign of $U$. Hence $U_i/U$ has the sign of $u_i$, which is positive (since non-saturation is assumed throughout). In this case, therefore, all goods are normal.

(*b*) $u_{hh} \geqslant 0$; $u_{ii} < 0$ for all $i \neq h$. If $i = h$ in (5), the sign of the product term is the sign of $(-1)^{n-1}$, so that $U_h/U$ is positive as in (*a*). If $i \neq h$ in (5), the product term has the sign of $(-1)^n$ if $u_{hh} > 0$, and is zero if $u_{hh} = 0$. Hence $U_i/U$ has the sign of $-u_i$ and is negative in the former case; in the latter case $U_i/U = 0$. Therefore $x_h$ is normal, and the remaining goods are either all inferior ($u_{hh} > 0$) or all neutral ($u_{hh} = 0$).

We now consider the relationships among goods. Two goods $x_i$ and $x_j$ are said to be (Hicksian) 'substitutes' if $U_{ij}/U > 0$, 'complements' if $U_{ij}/U < 0$, and 'unrelated' if $U_{ij}/U = 0$. $U_{ij}$ is the co-factor of the element $u_{ij}$ in $U$. In the present case we have:

$$\frac{U_{ij}}{U} = \frac{u_i u_j \prod_{k \neq i,j} u_{kk}}{U}. \tag{6}$$

The possible cases may be analysed as follows:

(*a*) $u_{ii} < 0$ for all $i$. The sign of the product term $\prod_{k \neq i,j} u_{kk}$ is the sign of $(-1)^n$, which is the sign of $U$. $U_{ij}/U$ therefore has the sign of $u_i u_j$, which is positive. Hence all pairs of goods are substitutes.

[1] Cf. Slutsky, op. cit., p. 46.

(*b*) $u_{hh} \geqslant 0$; $u_{ii} < 0$ for all $i \neq h$. If $h = i$ or $j$ in (6), the product term has the sign of $(-1)^n$; hence $U_{ij}/U$ is positive as in (*a*). If $h \neq i$ or $j$, the product term has the sign of $(-1)^{n-1}$ if $u_{hh} > 0$, and is zero if $u_{hh} = 0$. $U_{ij}/U$ is negative in the former case and zero in the latter. It follows that $x_h$ is a substitute for each other good, and that pairs of goods other than $x_h$ are either all complements ($u_{hh} > 0$) or all unrelated ($u_{hh} = 0$).

**4.** Let us now return to Professor Hicks's argument. If $u_{ii} < 0$ for all $i$, a fall in the price of $x_i$ will increase the quantity of $x_i$ demanded, since it is a normal good. All other goods are both normal and substitutes for $x_i$, so that the direction of their movement is in doubt. But Professor Hicks's conclusion that the demands for all of them will move in the same direction is of course valid for this case.

Now let us suppose that $u_{hh} \geqslant 0$, and that the price of $x_h$ falls. Since $x_h$ is a normal good, the quantity demanded will increase. The remaining goods are all substitutes for $x_h$, and either inferior ($u_{hh} > 0$) or neutral ($u_{hh} = 0$). Hence the demand must decrease for every good other than $x_h$.

If the price of $x_i$ falls ($i \neq h$), and $u_{hh} > 0$, the substitution and income effects will work in opposite directions for every good: $x_i$ is inferior; $x_h$ is a substitute for $x_i$ but normal; the remaining goods are complementary with $x_i$, but inferior. We can say, however, that the marginal utility of every good other than $x_i$ must move in the same direction. Since the marginal utility of $x_h$ is increasing while that of every other good is decreasing, it follows that a change in the demand for $x_h$ must be accompanied by a change in the opposite direction in the demand for every commodity other than $x_h$ and $x_i$.

If the price of $x_i$ falls ($i \neq h$), and $u_{hh} = 0$, the demands for goods other than $x_h$ and $x_i$ will be unaffected, since they are neutral and unrelated to $x_i$. The substitution effect alone will cause the quantity of $x_i$ (a neutral good) to increase, but the direction of movement of $x_h$ is in doubt, since it is both normal and a substitute for $x_i$.

**5.** Let us summarize our results. The hypothesis of direct additivity implies that either (*a*) all goods are normal and substitutes for each other; or (*b*) one good is normal and a substitute for every other good; the remaining goods are *either* all inferior and complementary with each other *or* all neutral and unrelated to each other.

This revision of Professor Hicks's argument does not appear to make the hypothesis of direct additivity any more plausible, at least in so far as it is interpreted in terms of narrowly defined commodities. If the hypothesis is taken to relate to broad groups of commodities, it becomes more acceptable. In this case the hypothesis that $u_{ii} < 0$ for all such groups seems

the only tenable one,[1] since the implication of the alternative assumption (see (*b*) of the preceding paragraph) seems scarcely credible. But any tests of the hypothesis of a utility function additive in terms of groups of commodities must, of course, also be greatly influenced by recent work on 'utility trees'.[2]

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[1] Cf. Houthakker, op. cit., p. 256, n. 17.

[2] See the papers in *Econometrica* by R. H. Strotz (Apr. 1957, pp. 269–80, and July 1959, pp. 482–8) and W. M. Gorman (July 1959, pp. 469–81 and 489).

# THE NATURE AND EFFECTS OF GOLD HOARDING IN UNDER-DEVELOPED ECONOMIES

*By* A. G. CHANDAVARKAR

THE hoarding of gold is often regarded as a major source of the misdirection of resources in under-developed economies and hence one of the root causes of their economic backwardness. It is commonly held as the leading species of a widespread genus of socially unproductive investment in these economies which includes some traditional asset-preferences such as the hoarding of currency, commodities, and the excessive accumulation of wealth in the form of land and luxury real estate. The theory of the baneful effects of the hoarding of gold and other precious metals which was originally propagated in modern economics in the works of Lord Keynes[1] has persisted with remarkable tenacity in much of the literature on the economics of under-development[2] without any systematic analysis of its real nature and economic effects. It is, however, necessary to know whether the causes and consequences of the hoarding of gold in under-developed countries really conform to received doctrine. In the present paper it will be argued that its motivation is of a character that renders the Keynesian analysis of liquidity-preference largely inapplicable to it, and further, that the actual extent of misdirection of resources involved is much less than

[1] It is interesting to note the continuity of ideas on this subject in Keynes's writings. Thus, in *Indian Currency and Finance* (Macmillan, 1913) it is said, 'India, as we all know, already wastes far too high a proportion of her resources in the needless accumulation of the precious metals. . . . It is interesting to reflect that India's love of the precious metals ruinous though it has been to her development, has flourished in the past to the great advantage of the Western nations' (p. 99). This was further refined in *The General Theory of Employment, Interest and Money* (Macmillan, 1936) to bring out its mechanics of operation in the framework of the analysis of liquidity-preference and its effects on investment. 'The history of India at all times has provided an example of a country impoverished by a preference for liquidity amounting to so strong a passion that even an enormous and chronic influx of the precious metals has been insufficient to bring down the rate of interest to a level which was compatible with the growth of real wealth' (p. 337).

[2] The following references are typical of the earlier and recent contributions to the subject.

'Even in some very poor countries savings are more than negligible (as an aggregate) but they are either standing idle as hoards or move into unproductive capital formation. In the Balkans, for example, the hoarding of currency notes is stated to be perhaps as much as 25 per cent of the total circulation. Gold coins and foreign currency are also hoarded. Similarly, hoarding has also gone on for generations in the Orient. But such hoarding means that what is saved is not made available for industrial equipment or for agricultural improvements' (Norman S. Buchanan, 'Deliberate Industrialisation for Higher Incomes', *Economic Journal*, Dec. 1946, p. 541).

'. . . in under-developed countries, the speculative indulgence in hoarding of commodities and gold and in wasteful forms of building leads to misdirection of resources. These anti-social methods of holding private wealth call for strict controls and stringent penal measures, Their extent does also depend, among other things, on the general state of credit and on levels of rates of interest. This is a sense in which monetary policy is very important' (R. F. Kahn, 'The Pace of Development' (*The Challenge of Development*, Hebrew University, Jerusalem, 1958), p. 185).

commonly supposed and even where there is such misdirection its mechanics are also different from those posited in the Keynesian framework. The irrelevance of monetary conditions, such as the state of credit and the structure and level of interest rates and hence of monetary policy to the phenomenon of gold hoarding also emerges from the analysis. To the extent that the accumulation of private wealth in the form of gold does involve some economic waste the relevant implications for policy are also indicated, notably the rationale and possible methods of gold mobilization.

## I

It is useful to have some idea of the order of magnitude of the hoarding of gold before analysing its nature and effects as this would indicate, prima facie, whether the problem is of a sufficiently serious magnitude. Though comparative estimates of private holdings of gold in different under-developed countries are not available, it would suffice for purposes of the present analysis to refer to some estimates for India which is regarded as the classic example[1] of a country with an insatiable appetite for the precious metals. These estimates[2] show that the total private stocks of gold in India would be around 105 million ounces, i.e. of the value of about $3,675 million on the basis of the U.S. Treasury's buying price of $35 per ounce. This is a large amount in absolute terms being the historical accumulation of stocks, but new hoarding is small in relation to the household sector's savings and the national income. Recent studies[3] of the savings pattern in India show that during the years 1950–8 gold as a proportion of the household sector's savings averaged around 3·6 per cent. and 0·2 per cent. of national income and its average rate of growth was 1·7 per cent. These orders of magnitude dispel the notion of excessive 'the saurisation' of the Indian economy, particulary in recent years. Thus, the role of gold as a savings medium in India is comparatively insignificant and it is unlikely to be more important in the case of other under-developed economics.

There is, equally, a good deal of misconception concerning the real nature and motivation of gold hoarding in under-developed economies. Hoarding can be attributed to three conceptually distinct motives, namely, precautionary purposes, the psychic income accruing from jewellery and ornaments, and expectation of capital appreciation, corresponding to which gold can be regarded as a liquid asset and a store of value, as a durable consumer good and as a hedge. Such hoarding is largely a non-

[1] Keynes, *The General Theory*, p. 337.

[2] 'Estimates of Gold and Silver Stocks in India', *Reserve Bank of India Bulletin*, Apr. 1958, pp. 3 and 4.

[3] 'Savings in the Indian Economy', *Reserve Bank of India Bulletin*, Mar. 1960. See also an earlier study by V. V. Bhatt on 'Savings and Capital Formation in India', *Economic Development and Cultural Change*, University of Chicago, Apr. 1959, p. 336.

monetary phenomenon notwithstanding some formal similarities of gold and money such as liquidity, non-interest yielding character, &c. The differences in the underlying motives for holding cash balances and for hoarding gold render the Keynesian analysis of liquidity-preference largely inapplicable to the case of hoarding of precious metals in under-developed countries. Thus, the transactions-motive is obviously not relevant since gold is not a medium of internal exchange. The hoarding of gold is no doubt partially actuated by the precautionary motive and a fairly useful index of this would be the volume of gold sales by agriculturists to meet either such fixed monetary costs like taxes, interest, and rent as cannot be met out of income, or else to maintain customary levels of consumption. But distress sales of gold are not normally of an appreciable magnitude because the esteem value attached to gold, particularly ornaments, being very high, its outright sale to meet current or capital outlays is only resorted to in exceptional circumstances such as acute depression. This is also evidenced by the comparatively negligible role of gold and silver (bullion and ornaments) as security for institutional and non-institutional credit.[1] The normal hoarding of gold cannot be regarded as a form of 'hump saving'[2] because it is not actuated mainly by the desire to 'provide for the saver's needs during his own lifetime, saving destined to be subsequently dissipated in dis-saving'.

Though gold functions as a store of value its specific role in under-developed countries, as a hedge against currency instability and inflation[3] is questionable. Firstly, the under-developed economies are better cushioned against instability than advanced economies in so far as a substantial portion of their income is derived from the non-monetized sector[4] and

[1] The relevant data for India bear this out. Thus, the advances against bullion (gold and silver) as at the end of the years 1956–9 were less than 1 per cent. of total bank credit. The proportion, inclusive of advances against ornaments, for which data are available only from 1960, is also very small (2·4 per cent.). (*Source*: *Reports on Trend and Progress of Banking in India* and other Reserve Bank data.) The All-India Rural Credit Survey's intensive inquiry in 1951–2 based on a stratified random sample survey of 75 districts showed that borrowings per cultivating family for 'all strata' which were secured by pledge of bullion and ornaments amounted to 2·5 per cent. of its total borrowings. (*Source*: This is derived from the tables on pp. 591–5 of the *Technical Report of the Rural Credit Survey*, vol. iii, Reserve Bank of India, 1956, which gives the strata-wise magnitudes of total borrowings and borrowings pledged by bullion and ornaments per cultivating family.)

[2] As defined by R. F. Harrod in 'Towards a Dynamic Economics' (Macmillan, 1948), p. 49.

[3] For instance, P. T. Bauer and B. S. Yamey, *The Economics of Under-developed Countries* (Nisbet, Cambridge University Press, 1957), p. 134, refer to the role of trinkets, precious stones, and metals 'as insurance against currency inflation'.

[4] For instance, the non-monetized sector in India is estimated at about one-third of the economy as a whole. An important index of this is the proportion of imputed value of consumption in kind to the value of total consumption of households in India which is placed at 36·8 per cent. for rural and urban areas. The proportions for rural and urban areas separately are estimated at 44·3 per cent. and 11·4 per cent. respectively (*The National Sample Survey, Fourth Round*; Apr.–Sept. 1952, No. 18, p. 13, issued by Cabinet Secretariat, Government of India, 1959).

to this extent the need or desire for a 'hedge' is attenuated. Secondly, some of them, like India, have had a measure of monetary stability over the last half-century and more to an extent not enjoyed by even some European countries such as France, Greece, and Italy where there is consequently a distinct demand for hoarding of gold as a hedge against currency instability. It is also doubtful how far the economic sophistication of the average individual in the under-developed economies, unlike in advanced countries, extends to the notion of holding an asset which will not depreciate in terms of his currency. Besides, gold is subject to some disadvantages as a hedge against inflation. Its value has no relation to the growth and development of the economy and consequently it does not, like equities[1] and real assets, share in the fruits of economic progress. It could, of course, also be maintained that gold functions as a hedge precisely because of the absence of a unique organic or functional relationship between gold prices and the growth of the economy which renders gold comparatively immune to price fluctuations affecting other assets. Gold in the form of ornaments in countries like India cannot be a good hedge because of a peculiarity of the ornaments market: their sale usually involves a capital loss in so far as the seller cannot get value for the cost of workmanship. This means that gold, apart from being a non-income-yielding asset in all forms, is subject in its most important form (ornaments) to a capital loss in the event of sale. The internal price of gold being much higher in most under-developed countries than its international price, its utility as a hedge has to depend exclusively on the internal market, quite apart from any statutory restrictions on export. Though the balance of the argument on the effectiveness of gold as a hedge against inflation in under-developed economies is somewhat indeterminate, the fact remains that the role of gold as a hedge is distinctly subsidiary.

The speculative motive also does not operate in the case of the large mass of gold hoarders, since it is only the dealers and middlemen in gold who are chiefly concerned with making estimates of future prices of gold and to take up 'positions' thereof with a view to profitable sale subsequently. This shows that Kahn's description of 'speculative indulgence' is inapplicable to the major part of the hoarding demand for gold in under-developed economies. By far the larger proportion of the stock of hoarded gold in under-developed economies consists of jewellery and ornaments which means that gold in these countries is really more akin to a durable consumer good than to cash balances and its use-value and esteem-value is

[1] Even in regard to equities, doubts have been expressed about their efficacy as a 'hedge'. Thus, T. Wilson, in his article on 'Equities and Growth' (*Lloyds Bank Review*, Oct. 1959), while not denying that equities have offered some protection against inflation, also adduces evidence in support of the thesis that 'it would not be true to say that equities have offered adequate security against inflation' (p. 16).

more important than the precautionary and speculative motives. The hoarding of gold is primarily motivated by the psychic income accruing from possession and use of ornaments and this in turn is largely a reflection of the sociological and historical milieu of countries which have under-developed economies as well as traditional societies such as those in the Middle East and South-East Asia. It is the role of gold as a durable consumer good that affords the real clue to the phenomenon of gold hoarding in these areas.

## II

The demand schedules for money (cash balances) and for gold are largely independent of each other and, therefore, changes in the cost and availability of money as reflected in interest rates and money-market conditions have no effect in either direction on the demand for gold. The steadiness of demand for gold in these economies shows that investment in gold does not depend, as argued by Kahn, on 'among other things, the general state of credit and on levels of rates of interest'. In fact, it is the 'other things', comprising largely non-monetary factors which really determine the level of demand for gold. The demand for gold being interest-inelastic no practicable rise in rates of interest is likely to divert gold from private hoards into the banking system[1] or into interest-bearing securities[2] or prevent further hoarding.

[1] Monetary experience in Greece after World War II has been invoked to show that a rise in interest rates could lead to dishoarding of gold. Thus, according to Sir Theodore Gregory (*Minutes of Evidence, Committee on the Working of the Monetary System*, H.M.S.O., London, 1960), 'the rise in bank deposit rates in Greece did induce people to hold currency instead of sovereigns. That is very significant; it overcame not a liquidity preference but a gold preference' (Q. 10788, p. 727). '. . . in countries in which there is a gold market in which holders of gold are not very certain of their legal position, they hold sovereigns just because there is nothing else to hold, and the mere fact that they are offered a higher rate of interest is a sufficient inducement to switch from one to the other. I do not think that (in under-developed countries particularly) people have clear ideas about liquidity preference' (Q. 10789).

This line of reasoning overlooks that, assuming gold hoarding to be sensitive to interest rate changes, an increase in bank deposit rates should have really led to a switch of sovereigns into deposits rather than currency. Besides, the very fact that notions of liquidity-preference —which is rightly distinguished from gold-preference—are amorphous in under-developed countries should make one chary of attributing any impact on gold hoards from changes in interest rates.

In this context it is interesting to recall Goschen's address to the London Chamber of Commerce in 1891, 'you may raise your rate of interest to 6 per cent. but the bulk of the people will not carry less gold in their pockets than they did before, and I doubt whether from other quarters you would be able to get much addition to your central store' (quoted by J. M. Keynes, *Indian Currency and Finance*, p. 73). Though Goschen had in mind, primarily, the insensitivity of the transactions circulation of gold to interest rate changes, he was also sceptical of their efficacy in mobilising non-transaction stocks of gold. This would be even more so where the non-monetary demand for gold is stronger as in the under-developed countries.

[2] This was proved by the poor response to the Government of India's 3½ per cent. National Plan Loan 1964 issued in 1954 which allowed the facility of tendering subscriptions in jewellery and ornaments. Such subscriptions amounted to only Rs. 85,000 out of a total subscription of Rs. 1,300 million (see Statement of Parliamentary Secretary to Finance Minister, Government of India, 12 Sept. 1954).

The demand for gold is also, over a considerable range, largely independent of its price because of the esteem-value being the primary motive for it. In other words, the hoarding of gold is undertaken for reasons unconnected with the price of gold. In point of fact, the demand for gold in under-developed economies is determined largely by variations in the level of incomes. An increase in incomes is likely to lead to an increase in the offtake of gold even as, under exceptional circumstances, a fall in incomes to levels insufficient to maintain the customary standard of living and/or to meet fixed money costs such as taxes, rent, and interest may result in liquidation of gold hoards. It is, however, difficult to say to what extent gold hoards represent reductions in consumption—in which case they would be genuine net saving—or are merely a substitute for other forms of saving. In the case of lower income groups whose marginal propensity to consume is normally very high, the purchase of gold would more probably be at the expense of consumption whereas in respect of the higher income groups whose marginal propensity is low it would represent savings which would have been made in one form or another. The insensitivity of gold hoarding to gold prices is also evidenced by the comparative absence of self-correcting price expectations in the gold market and consequently it cannot be maintained that 'every rise in gold price will diminish the desire to hoard gold as the risk of a subsequent fall in the price of gold becomes greater'.[1] On the contrary, the strength of demand for gold is such as to generate perverse expectations so that a rise in the price of gold may even increase the demand. The lack of any consistent and determinate relationship between the hoarding of gold and the price of gold means that a rise in the price of gold[2] would be ineffective as a means of preventing gold hoarding or of mobilizing existing hoards.

[1] N. Kaldor, *Indian Tax Reform* (Ministry of Finance, Government of India, 1956), p. 118.

[2] Thus, R. F. Harrod argues ('The Role of Gold Today', *South African Journal of Economics*, Mar. 1958, p. 10) that 'a stiff increase in the price of gold would relieve the situation, not only by increasing the value of world stocks in relation to international trade but also by stimulating new output in the long run and by reducing the very large seepage of gold into private hoards'.

Though there has been a continuous rise in the price of gold in India since 1956–7, the first year of the Second Five-Year Plan, it has not curbed gold hoarding in the country.

*Spot Price per Tola* of Gold in Bombay (in Rs.)*

| *Year* | *Highest* | *Lowest* | *Average* |
|---|---|---|---|
| 1956–7 . . | 109·62 | 98·94 | 104·52 |
| 1957–8 . . | 114·37 | 104·50 | 108·46 |
| 1958–9 . . | 120·50 | 104·19 | 112·08 |
| 1959–60 . . | 134·62 | 116·50 | 124·40 |

* Tola = three-eighths of an ounce.

*Source*: Reserve Bank of India Bulletins.

But a high or rising level of gold prices has hardly any significant economic consequences. It reflects the strong normal propensity to hoard gold relatively to a fixed supply of gold in under-developed economies with a free internal market for gold since in most of these communities there is neither new production nor fresh imports. A rise in gold price leaves the total quantum of hoarded gold unaffected because the economy as a whole cannot hoard more gold than the fixed existing supply and nor does it raise the general price level or affect the productive potential and real capital formation in the economy.

A rise in the internal price of gold in terms of the local currency cannot be regarded as an operative causal factor in inflation which is basically a reflection of the excess of monetary demand over available real output in the economy. It is really a symptom and cannot be regarded as a cause of inflation even under conditions of hyper-inflation[1] which may persist as long as the underlying causes of inflationary pressure are operative. In point of fact, it is difficult to posit any 'systematic' relationship between gold prices and commodity prices and one cannot, therefore, attribute any primacy to gold prices as a causal factor, whatever the degree of inflation. Besides, a rise in the price of gold has hardly any deleterious effects on the general cost price structure even remotely comparable to those associated with a rise in prices of wage goods which are really the key prices in an under-developed economy. A diversion of demand to gold from other commodities would actually be anti-inflationary and permit an increase in development expenditure with a smaller degree of rise in general prices. A rise in the internal price of gold does not stimulate the consumption of holders even if it increases their net worth since gold being largely held for its psychic income it is unlikely to be dehoarded from time to time for purchase of goods and services. Consequently hoards of gold cannot be regarded as a pocket of latent inflation. In so far as they represent foregone consumption they have a net anti-inflationary impact[2] and as such far from being anti-social they act as a safety-valve for the inflationary pressures to which most under-developed countries are at present subject in their attempts at accelerated development. The deflationary effects of gold hoarding can always be offset, if necessary, by government creation of

[1] According to Kaldor, op. cit., p. 119, in a state of hyper-inflation, 'it may be quite true that an enhanced rate of increase in the price of gold will cause an enhanced rate of increase in the price of wheat or rice, or other staple foods'.

[2] The anti-inflationary significance of gold absorption by the public is well brought out by war-time experience of gold sales in India and the Middle East. 'Even when the peasant has been ready to take paper money he liked the paper money so little that he was ready to spend it at the first opportunity, whereas the gold round his wife's neck would be wrung from him only under the duress of depression. The brake which the gold sales put upon the inflation of the paper currency thus gave the situation some stability, it reduced the element of "repressed inflation"' (R. S. Sayers, *Financial Policy, 1939–45*, H.M.S.O., London, 1956, p. 284).

purchasing power in excess of current receipts from taxes and borrowing from genuine savings. The extent of such hoarding indicates one of the safe limits to possible deficit financing by public authorities, though it is conceivable that under certain circumstances such deficit financing itself may stimulate gold hoarding through adverse expectations regarding the future course of money values. But more hoarding of gold need not be a bar to development expenditure by government. The rise in internal prices of existing gold stocks does not, by and large, amount to a diversion of real resources from productive channels except perhaps for the wastage of entrepreneurial talent in gold transactions which anyhow is likely to be of the second order of smalls. Sales and purchases of existing gold do not also affect the magnitude of total real savings since they merely represent asset transfers within the economy.

## III

It is only if the assumption of a fixed supply of gold is invalid that the hoarding of gold has a bearing on economic development, namely through absorption of real resources which could have been utilized in productive investment as, for instance, when precious metals are imported (including illicit imports) and, therefore, have to be paid for ultimately by exports of goods and services or else, in the case of hoarding, of locally produced gold through diversion of domestic factors of production from more productive activities. It is, however, arguable whether the direct or indirect absorption of real resources by gold production and imports has been of such a magnitude as to create any special problems. Since domestic production of gold in most under-developed countries has been negligible, their demand for precious metals has been met by imports financed out of their real export surpluses and to that extent they have no doubt constituted a misdirection of resources which could have been better utilized for imports of capital or consumer goods. Though the import of gold has a wholly anti-inflationary effect it is less productive than the use of an equivalent amount of foreign exchange for imports of useful goods and services. This is because the effect of gold imports is largely limited to the resultant absorption of purchasing power whereas the import of other durable consumer goods and capital goods, in addition, also enhances productivity in the economy. But even with regard to the historical imports of gold and the precious metals in under-developed countries, it would be misleading to regard them as purely a net leakage of resources. It can be maintained that precious metals have played the role of 'inducement goods'[1] for

[1] According to Bauer and Yamey (op. cit., p. 140–1) 'the importance of new or improved consumer goods in inducing producers to join the exchange economy is implicit in the term "inducement goods" often rightly applied to these commodities'. But this is unduly restrictive since a good need not necessarily be new or improved for it to act as an

producers of agricultural commodities and thereby helped to maintain and even increase their marketed surplus. This was in fact partly the rationale of official gold sales during World War II in India and the Middle East.[1] The role of precious metals as an inducement good and consequently as an instrument of monetization and development of subsistence economies is overlooked in historical and contemporary discussions of the problem. It arises partly on account of the implicit assumption of Keynesian analysis that all imports represent net leakages from the income-stream, whereas imports are often complementary to domestic investment[2] not only for technical reasons, as in the case of capital goods and raw materials, but also because of the incentive effect of consumer goods on domestic producers operating through 'straightening' of backward-sloping supply curves of effort in the economy. There is, however, the possibility of the incentive effect of gold import being swamped by the loss of productive potential represented by foregone imports of producer goods.

Thus the hoarding of imported or domestically produced gold cannot necessarily be regarded as a drag on economic development and historically even when it has so acted it has hardly operated along the Keynesian chain of causation, namely, through the action of the liquidity trap in preventing the fall of 'the rate of interest to a level which was more compatible with the growth of real wealth';[3] it has no bearing on the direction or pace of development unless it involves absorption of real resources and even such absorption may not always be of an appreciable magnitude. It therefore follows that the importance assigned in the Keynesian scheme of ideas to the role of gold hoarding as a case of excessive liquidity-preference holding up real investment is misplaced.

inducement good. Rather this description is applicable to any good which has the effect of evoking an increased supply of effort to the exchange sector. In fact, familiar but scarce and intensely desired goods qualify especially for this role. One might, therefore, legitimately extend the concept of inducement goods to precious metals which have also been instrumental in extending the exchange economy and the magnitude of the marketed surplus in under-developed economies. Gold can function as an inducement good not only through an increase in its supply and availability, but also through a rise in its price, because the demand for gold being price-inelastic over a considerable range an increase in its price could also have an incentive effect since buyers are thereby induced to earn higher incomes to acquire gold.

[1] '. . . a large share of the success of the cereals collection campaign of 1943 in the Levant States was due to the availability of relatively cheap gold. This readiness of the peasant to part with grain in exchange for gold—a perfectly normal phenomenon of Eastern prosperity—was immensely important' (Sayers, op. cit., p. 284). Much the same point is also made in his analysis of war-time sales of gold in India, which were justified on the ground that 'availability of gold for hoarding purposes should tend to lessen the hoarding of commodities: by bringing supplies of foodstuffs on the market, the gold sales would put a brake on the inflation of commodity prices' (op. cit., p. 268).

But Chinese experience in the final years of World War II has been apparently different, 'Aircraft loads of gold were imported as a means of fighting famine conditions, though with doubtful effect' (Kaldor, op. cit., p. 119).

[2] All this reflects the neglect in the 'General Theory' of 'complementarity' in the capital structure and investment pattern.

[3] Keynes, op. cit., p. 337.

## IV

The foregoing analysis shows that in the absence of domestic production and import of gold there is no absorption of real resources through gold hoarding and there is, therefore, no policy problem involved so long as the stock of gold in the community as a whole is constant because under these conditions only its ownership pattern changes and there are no positive economic effects associated with this. The real objective of policy, so long as gold remains an important medium of international payments, should be the mobilization of gold hoards to cover part of the foreign exchange gap of the economy though the release of gold hoards will not mean a corresponding release of internal real resources for capital formation; and unless the gold is used to finance imports of real goods and services its continued hoarding is of no consequence. In this respect gold constitutes an important exception to the fact that the real problem of underdeveloped economies is not one of mobilizing the 'fund' of idle savings[1] but of increasing the 'flow' of saving because in so far as it is capable of being mobilized as foreign exchange the magnitude of the stock of gold is certainly relevant. Though the utilization of hoarded gold as foreign exchange would be in the nature of a once-for-all operation even if its actual mobilization, which represents drawing down of a stock is phased over a period of time, it would still constitute a vital accession of resources[2] to an under-developed economy in crossing the crucial foreign exchange 'hump' in the pre-take-off period. This is the only economic justification for mobilizing gold hoards in under-developed economies. But any scheme for the mobilization of gold hoards will always encounter the fundamental objection that so long as the major portion of hoarding demand emanates from non-monetary motives it is idle to expect any substantial response to such schemes, however attractive the terms of assets in which gold is to be converted. Even so it would be pertinent to examine the feasibility of schemes aimed at mobilizing gold hoards.

The Government could acquire gold from private hoards in the country to meet the foreign exchange liabilities of the public sector even though such purchases at open market prices[3] which are very much higher than

[1] For instance, the fund of idle savings in the form of hoards of currency or time and savings deposits with banks does not create any problem of mobilization since it has already been 'invested' during the income period in which it was 'saved' and in the event of these idle savings being mobilized and spent their expansionary effect is the same as that of a corresponding increase in spending financed with newly created money.

[2] The estimated stock of hoarded gold in India at around $3,675 million may be compared to the estimated deficit in the balance of payments during the Second Five-Year Plan of about $4,400 million. It would, however, be rather unrealistic to assume maximum mobilization of gold hoards.

[3] This should be possible consistently with the obligations of member countries to the

the international parity prescribed by the International Monetary Fund might appear highly uneconomic since their valuation for finance of any imports will necessarily have to be in terms of the very much lower international parity price. Similarly, such open market purchases, which are meaningful on the assumption that they absorb only the existing internal stocks of gold, might also seem to run the risk of encouraging illicit imports so that the eventual accretion to official foreign exchange reserves of gold would be more than offset by the indirect loss of foreign exchange as measured by the excess price of illicit imports of gold over its international price. However, the direct and indirect losses as a result of official purchases of gold at the higher internal prices would be justifiable in real terms if the higher productivity of the domestic real assets made possible by the imported goods can more than offset this initial loss. This also follows from the fact that owing to the existence of an indispensable import—content in development programmes domestic saving is no substitute in real terms for the goods and services that cannot be produced at home and which have therefore to be necessarily imported. Official purchases of gold at internal market prices would not raise any insuperable problems arising from the disposal of the premium gains of private sellers of gold, on the reasonable assumption that they would anyhow be retained within the economy. Their inflationary potential could be adequately controlled by monetary, fiscal, and other instruments of policy. If the money received in exchange for gold is saved in other forms or invested in new assets it does not obviously create any problem and even if it is used to buy existing assets the resultant rise in prices of such assets would not have any deleterious consequences. In the event of its being diverted to luxury expenditure, it should be possible to levy indirect taxes on items of luxury consumption. Indirect taxation of the probable avenues of expenditure of these proceeds would be more practicable than direct taxation of such gains, since apart from the possibility of evasion, they might deter hoarders from selling any gold even if the marginal rates of direct taxes on gold sales are well below unity whereas indirect taxes are less likely to act as deterrents.

One possible scheme of gold mobilization would be the issue of government securities to be subscribed and also redeemed in gold after a specified period of time, since prima facie there would be no point in the issue of securities which are subscribable in gold but redeemable in domestic

International Monetary Fund, which while it 'strongly deprecates international transactions in gold at premium prices and recommends that all its members take effective action to prevent such transactions in gold with other countries or with the nationals of other countries' would not object to domestic transactions in gold at prices above parity 'unless they have the effect of establishing new rates of exchange or undermining existing rates of other members, or unless they result in a significant weakening of international financial position of a member which might affect its utilisation of the Fund's resources' (*Report of External Transactions in Gold at Premium Prices*, International Monetary Fund, Washington, 1950, p. 6).

currency because the possibility of selling gold and investing the proceeds in government securities is always there. But the issue of government securities, subscribable and redeemable in gold, whether they are of the 'income-type', i.e. yielding a periodic interest income, or of the 'appreciation-type', i.e. yielding accumulated interest on maturity, would raise difficult organizational problems such as calculation of interest, &c. Actually only that portion of gold held as a convenient medium for concealment of taxable income and wealth might be attracted into gold bonds if these are issued in the form of bearer securities.

In view of the difficulties inherent in mobilizing private gold hoards for the use of the public sector a more promising approach would be to attempt to mobilize these hoards to raise the foreign exchange required for the indispensable import-content of the private sector itself but through the mediation of the government. This could take the form of issue of import licenses for capital or essential consumer goods to such private importers as are able to produce the requisite amount of gold from sources known or accessible to them. Such a scheme will be aimed naturally at those producers who expect that any loss that they might incur through export of gold at the international parity price will be more than offset by the prospective profit on their projects financed by the imported materials and equipment. Import licensing to the private sector merely on production of the requisite amount of gold has, of course, the risk that importers' scales of priority may differ from those of government and consequently the requisite amount of gold may not be forthcoming. Besides, the major portion of hoarded gold being in the form of jewellery and ornaments it is not available in an easily disposable and exportable form.

It is conceivable that unorthodox schemes of gold mobilization in the form of bearer gold bonds or the issue of import licences on production of gold may put a premium on illicit imports of gold and tax-evasion and create difficult problems of choice between economic 'real-politik' and social ethics. The balancing of the economic and social costs of such schemes against the gains of acquiring much needed foreign exchange will challenge the resources of economic statesmanship and administration in the under-developed economies.

Bombay, India

# THE INTERNATIONAL MONETARY FUND AND BALANCE OF PAYMENTS ADJUSTMENT[1]

*By* W. R. ALLEN

SOME of us have long wondered what the International Monetary Fund is and why. It is, of course, a collector and distributor of considerable quantities of world financial and economic data. Also it is the employer of a sizeable number of competent analysts. And it holds meetings, regularly and irregularly, formal and informal, large and small, in the interest of promoting 'consultation and collaboration on international monetary problems'.[2]

All of these activities can be blessed. But it seems no exaggeration to say that the crucial consideration in taking the measure of the Fund pertains to its role in international monetary adjustment. To what extent, and in what manner, is the Fund an instrument, or institution, of international adjustment? And what rationale of the nature of its contributions to adjustment does the Fund publicly present?

Although the *Articles of Agreement* indicate that one of the purposes of the Fund is 'to shorten the duration and lessen the degree of disequilibrium' in balances of payments,[3] only rarely is the Fund analysed as the institutionalization of an adjustment mechanism, and the Fund itself generally phrases its role and objectives in somewhat different terms. According to the Fund, its main concern is to promote a soundly based trade-and-payments multilateralism, requiring the drastic curtailment, if not elimination, of payments restrictions, particularly of a discriminatory nature, and the establishment and maintenance of convertibility. But attainment of these objectives—multilateralism, non-discrimination, and convertibility—has as a necessary condition substantial equilibrium in at least the major balances of payments. The balance of payments

[1] Helpful suggestions have been received from Robert E. Baldwin, Wytze Gorter, Lawrence F. Mansfield, and Leland B. Yeager. The paper was prepared largely during the tenure of a Ford Foundation fellowship; the analysis does not necessarily represent the view of the Foundation. An earlier version was read at the annual meeting of the Southern Economic Association, Nov. 1959.

It is hoped that this unexhaustive, impressionistic, and irreverent paper—based in large measure on taking at face value the published statements of the I.M.F.—will not be considered by my friends at the Fund as a churlish reaction to the many courtesies they have shown me.

[2] *Articles of Agreement of the International Monetary Fund*, Art. I (i).

[3] Ibid., Art. I (vi). Another purpose is to make resources available to members, 'thus providing them with opportunity to correct maladjustments in their balance of payments without resorting to measures destructive of national or international prosperity'. Ibid., Art. I (v).

adjustment mechanism is, therefore, a crucial consideration in delineating the position and role of the Fund and in evaluating its performance.

In speaking of a balance of payments *disequilibrium*, we presumably are referring to a relative state of constituent items which normally cannot long obtain. And in speaking of a *mechanism* of adjustment, we presumably are referring to some more or less readily definable and discernible set of variables and functional relationships constituting an engine which will reconstitute the transactions into a relative state which can, in the absence of outside shocks, persist indefinitely. A *mechanism* of adjustment perhaps suggests an element of automaticity, even if supplemented by discretionary policy; if so, it suggests a substantial coherency, a distinguishable system and sequence of correcting pressures and repercussions in response to the initial appearance of the disequilibrium, the sequence coming to an end with the final inducement of equilibrium.

What, then, is the Fund to contribute to balance of payments adjustment? Harrod, in his biography of Keynes, reveals that this problem was acknowledged, even if reluctantly, and not adequately solved in the early war-time planning. Harrod, at the time,

> pointed out to Keynes that, in the long run, his Clearing Union did not provide an automatic mechanism for redressing the [trade] balance. . . . He seemed only to have provided a temporary easement—albeit a very large one—not a permanent cure. . . . Keynes recognized that the problem was not completely solved in his Clearing Union; he hoped that the Fund was so large that within the period of easement provided by it the creditor nation or nations, in consultation with the debtor nations of the Board, would find means of adjusting their position.[1]

## I

Inevitably conspicuous in any systematic consideration of how nations 'find means of adjusting their position' is the role of exchange rates. 'The establishment of the Fund', we are informed in an *Annual Report*, 'was an indication of the general acceptance of the principle that the exchange policy of one country affects the well-being of all others.' And 'the co-operation of members through the Fund is the most effective means of obtaining and maintaining a pattern of exchange rates suitable to the world economy'.[2] If the establishment and stubborn defence, through the agency of the Fund, of *a particular pattern* of rates is presented as a corol-

[1] R. F. Harrod, *The Life of John Maynard Keynes* (London: Macmillan & Co. Ltd., 1951), pp. 542–3.

[2] *Annual Report*, 1949, p. 21. The Managing Director of the Fund, while noting the acceptability of the 1949 devaluations, asserted recently that 'at present there is no doubt that a strengthening of the existing exchange structure is in the general interest—and the substantial increase in the resources of the International Monetary Fund over the last year has been aimed to further such a strengthening'. Per Jacobsson, Stamp Memorial Lecture, London, 19 Nov. 1959, mimeographed, p. 8.

lary of the self-evident proposition that exchange policy is of international interest, it is a *non sequitur* of impressive proportions.

Apparently neither Keynes nor Harry Dexter White, while preparing plans for the eventual Fund, seriously doubted the desirability of essentially stable rates. The *Articles of Agreement* state that a major purpose of the Fund is 'to promote exchange stability, to maintain orderly exchange arrangements among members, and to avoid competitive exchange depreciation'.[1] If there has been serious and considerable debate within the Fund concerning alternatives to essentially stable rates, it has been thoroughly hidden from public view. Nor has the Fund presented a substantial public discussion of exchange rate theory since 1951. Indeed, the Fund is sufficiently sanguine to dismiss the matter by asserting that 'exchange stability' is one of the 'important and generally accepted objectives of economic policy'. Exchange risks are thereby kept to a minimum, and essential 'confidence in the currency' is promoted.[2]

But rates are to be 'realistic'[3] as well as stabilized. When conditions have changed so that existing rates 'have lost touch with economic realities',[4] they may be altered. The Fund early assured its members that it would not make a 'fetish of exchange stability', which would regard 'any changes from the agreed par value . . . as highly abnormal and to be sanctioned only reluctantly and in the most unusual circumstances'.[5]

We may agree that 'stability of exchange rates does not mean rigidity of exchange rates'.[6] But just how flexible are rates supposed to be, in the Fund's view? Well, there are to be (orderly) changes in rates 'when they become necessary'.[7] No one can ask for more than that. But one can ask why the Fund and its members, rather than the market immediately, are to decide when, in what direction, and by what amount rates are to change. And if these prices are to be changed by institutional consultation and decree rather than directly by market pressures, one can be curious as to the criteria and the mechanism employed.

The Fund agrees that sometimes exchange rate adjustment *may* be preferable to the alternatives of violent contractions in domestic economic activity and of direct controls. But the Fund is eminently successful in

[1] *Articles of Agreement*, Art. I (iii). On the history of the Keynes and White plans and negotiations with respect to exchange stability, see R. N. Gardner, *Sterling–Dollar Diplomacy* (London: Oxford University Press, 1956), pp. 74, 78–79, 88–90, 114–15, and W. M. Scammell, *International Monetary Policy* (London: Macmillan & Co. Ltd., 1957), pp. 125–6, 129–30, 136–7.

[2] *Annual Report, 1958*, p. 20. 'The [par value] system is not a wise one merely because it was written into the Articles of Agreement. But it is correct to state that it was written into the Articles of Agreement because it emerged from the experience of the world over a period of many years.' *Annual Report, 1951*, p. 37.

[3] *Annual Report, 1958*, p. 20.

[4] *Annual Report, 1948*, p. 21.

[5] Loc. cit.

[6] *Annual Report, 1949*, p. 21.

[7] Ivar Rooth (Managing Director, 1951–6), *Annual Meeting, 1956*, p. 13.

restraining its enthusiasm for changes in rates as 'an instrument of economic policy'.[1] There are grounds for suspecting that when the Fund speaks of readily agreeing to change rates which 'have lost touch with economic realities', we may reasonably interpret its view to mean that *conceivably* rate changes should be seriously *considered* when rates are so immensely unrealistic that it would be patently *ridiculous*, if not politically and economically *disastrous*, to maintain them.[2] And since eminent observers will probably never show unanimity of opinion as to whether current rates are *sufficiently* unrealistic to warrant changing—witness the debate on the wisdom of the 1949 devaluations—the Fund's 'stable but flexible' rate formula is likely to come pretty close to a fetish for stability, after all.

In its latest (if not last) public discussion of exchange rates, in the *Annual Report* of ten years ago, the Fund somewhat incredulously noted that there are those who advocate fluctuating rates on the ground that 'exchange rates should be left to find their own level, in the belief that market forces can best determine appropriate valuations for currencies'.[3] The *Report* advances a number of reasons why 'a system of fluctuating exchange rates is not a satisfactory alternative to the par value system'.[4]

First, although 'no one would deny that the maintenance of a given exchange rate is sometimes . . . very difficult',[5] 'it is a striking fact that the maintenance of stable rates of exchange is virtually the invariable objective of all countries at all times'.[6] The consensus of opinion of finance ministers *is* of legitimate concern to the Fund, but academic economists may be excused if they are reluctant to rely primarily on such authorities for their understanding of economic theory or even of the essence of the institutional workings of the market.

The second reason offered by the Fund should be quoted in full:

> Those who advocate allowing rates to find their 'natural' level, permitting market forces to determine a rate of exchange that will be stabilized [a term, incidentally, of

[1] *Annual Report, 1949*, p. 22.

[2] 'A fixed exchange rate is desirable as long as a country is able to adjust its economy to changes in its real international economic position. But when the adjustments needed in face of a *radical* change in a country's international economic position cannot be made through home prices and costs, it *may* be necessary to change the exchange rate. . . . It *may* be preferable for a country to change an unsuitable exchange rate . . . rather than to subject its economy to the risks of *serious* deflation and unemployment or to impose restrictions that keep imports so low as to *endanger its well-being and efficiency*.' Ibid., pp. 21–22 (emphasis added).

[3] *Annual Report, 1951*, p. 37.

[4] Ibid., p. 39. That the issue of fixed versus flexible exchange rates is complicated is suggested by the presence of eminent economists on both sides of the debate. The purpose here is not to resolve the question. Rather, it is to survey the Fund's own defence of indefinitely pegged rates, and to observe that defence in the broad context of balance of payments adjustment.

[5] Ibid., p. 37. And if rates must be altered, 'the choice of an appropriate new rate' presents 'a most difficult problem'. 'The determination of the appropriate relative values of currencies cannot be a matter of simple mathematical computation.' *Annual Report, 1950*, pp. 9, 31.

[6] *Annual Report, 1951*, p. 37.

less than transcendent clarity], seek [apparently sinfully] to provide a simple solution for a very complex problem. There is no such thing as a 'natural' level for the rate of exchange of a currency. The proper rate will, in each case, depend upon the economic, financial and monetary policies followed by the country concerned and by other countries with whom it has important economic relationships.[1]

From this it appears that the free market is not simply a poor substitute for the Fund in determining the equilibrium rate of exchange, it is no substitute at all, for the free-market solution would be indeterminate! It is gratifying that the Fund is impressed by the complexity of the market system of relative prices, but it is even more discouraging that the Fund feels that advocating allowing the market to work is a naïve idea and that awesome problems can be solved only through conscious and detailed direction by awesome intellects, here represented by the Fund.

Is the *Report* really equating the allegedly nonexistent 'natural' level of an exchange rate with 'equilibrium' level? Surely not, for there is always an equilibrium level. Indeed, there may be several equilibrium levels!—for an *unstable* equilibrium rate will be bounded above and below by *stable* rates.[2] If the *Report* is saying simply that the equilibrium level may be of different values, depending on other variables, it is, of course, correct. Therefore, sophisticated advocates of stable-but-flexible rates have explicitly introduced consideration of changing trade barriers and of national income into their conception of the equilibrium rate of exchange.[3] Similarly, an advocate of freely fluctuating rates may specify that he prefers that market equilibrium level which tends to obtain when employment is 'full', the price level is steady, and trade barriers are at worst not increasing.

The third objection to fluctuating rates is that changes in rates lead to shifting of resources; the shifting and readjustment requires time; therefore, short-run changes in rates are 'a very poor test of basic economic inter-relationships', and 'whether a given exchange rate is at the "correct" level can be determined only after there has been time to observe the course of the balance of payments in response to that rate'.[4] It is certainly true that prices in a free market tend to fluctuate—as J. P. Morgan is supposed to have prognosticated with respect to the stock market. However, it is true also that pegging *one* price will not prevent other changes and the burdens (and benefits) of readjustment; and the burdens might be less (and

[1] Ibid., p. 38.

[2] Egon Sohmen, 'Demand Elasticities and the Foreign-Exchange Market', *Journal of Political Economy*, lxv (Oct. 1957), pp. 431–6.

[3] Notably, Ragnar Nurkse, 'Conditions of International Monetary Equilibrium', *Essays in International Finance* (International Finance Section, Princeton University, Spring 1945), reprinted in H. S. Ellis and L. A. Metzler, *Readings in the Theory of International Trade* (Philadelphia: Blakiston Co., 1949), pp. 3–34, and reprinted in part in W. R. Allen and C. L. Allen, *Foreign Trade and Finance* (New York: Macmillan Co., 1959), pp. 296–312.

[4] *Annual Report, 1951*, p. 38.

the benefits greater) if we allowed *all* variables to vary. Finally, one may reasonably ask who is obliged to 'determine' the so-called correct level when rates are free to move? If there were no pegging, no one would have to worry about the level at which pegging must be done. Letting the market substitute for the pegging institution is, indeed, a simple solution for a very complex problem, and the simplicity is a virtue, not a defect, of the solution.

The fourth point of the *Report* is that 'past experience with fluctuating rates of exchange has proved that movements in the rate are significantly affected by large speculative transfers of capital'.[1] I shall comment only that (*a*) there is doubt on the part of some that speculative capital movements have conspicuously characterized relevant experience with fluctuating rates,[2] and (*b*) there is apparently no doubt at all—certainly not on the part of the Fund itself[3]—that such speculation has occurred in significant volume with pegged rates which are rumoured, rightly or wrongly, to be faced with alteration.

The Fund has conceded that in 'exceptional circumstances', and for 'temporary periods', fluctuating rates can be permitted. If the domestic price level is rapidly rising, 'exchange stability is quite impossible'; if price rises are persistent, 'a progressive depreciation is unavoidable'.[4] But the toleration of a fluctuating rate is nothing more than 'a choice of the lesser evil to be set against the harmful alternatives of complex multiple rate systems or substantial use of quantitative restrictions'.[5]

While the Fund reluctantly agrees that rates should be modified under certain conditions, devaluation, it holds, is a policy to be handled gingerly.

[1] Loc. cit.

[2] See, for example, Milton Friedman, 'The Case for Flexible Exchange Rates', in *Essays in Positive Economics* (Chicago: University of Chicago Press, 1953), pp. 174–7, reprinted in Allen and Allen, op. cit., pp. 329–32, and J. E. Meade, *The Balance of Payments* (London: Oxford University Press, 1951), chap. xvii. See also the empirical surveys by S. C. Tsiang, 'An Experiment with a Flexible Exchange Rate System: The Case of Peru, 1950–54', *International Monetary Fund Staff Papers*, v (Feb. 1957), pp. 449–76, and 'Fluctuating Exchange Rates in Countries with Relatively Stable Economies: Some European Experiences After World War I', ibid. vii (Oct. 1959), pp. 244–73.

[3] For brief references to the experience of 1949, see *Annual Report, 1950*, pp. 7, 14, 30–31; on 1957, see *Annual Report, 1958*, pp. 1, 45, 47–48, 51, 89–90. A post-World War II case study is given by Harry C. Eastman, 'The Role of Speculation in French Foreign-Exchange Crises', *Journal of Political Economy*, lxi (June 1953), pp. 209–20.

[4] *Annual Report, 1948*, pp. 25, 26, 63. It appears that not all general supporters of the pegged-but-flexible rate system would accept this particular concession to freely fluctuating rates. Lionel Robbins (*The Economist in the Twentieth Century* [London: Macmillan & Co. Ltd., 1954], pp. 98–99) feels that a situation in which 'internal finances are weak' is precisely the sort least appropriate for a 'floating rate'. 'Indeed, I can hardly think of anything more likely to hasten disaster than to release a rate of exchange while taking no steps, or only inadequate steps, to control internal inflation.'

[5] Per Jacobsson (Managing Director, 1956– ), address to the Economic and Social Council, United Nations, New York, 16 Apr. 1958, mimeographed, p. 7; see also *Annual Report, 1958*, p. 20.

Having once established a system of pegged rates, there may, indeed, be something to be said in favour of caution in the use of devaluation. For example, rumours of devaluation, which could gain substance from frequent devaluations in the past, can lead to currency and commodity speculation which puts added strain on the balance of payments. Again, the too-ready employment of devaluation may promote the conception of devaluation 'as a means of easy competition'[1] and lead to retaliatory repercussions which will pull down the entire structure. *If* we are to have, for good or ill, a system of stable rates, then perhaps they should be very firmly stable. Each financial system calls for its particular emphasis of discipline. Infirmly stable rates are likely to provide a poor framework for the development and utilization of adjustment mechanisms other than changing exchange rates. This could give the worst of all possible worlds: rates which are too sticky and insensitive to promote adjustment efficiently but without properly developed alternatives which might be expected under a régime of firmly stable rates. However, one may gain the impression that the Fund sometimes may wrongly conceive that arguments for infrequent changes in pegged rates are also arguments for a system of pegged rates in the first place.

A particular cause for the reluctant approach of the Fund to devaluation is the association of devaluation with inflation. Sometimes, as we have noted, persistent devaluation is considered an inevitable *consequence* of unrestrained inflation. It is considered also as a scarcely less inevitable *cause* of inflation. In fact, this overstates the real relationship.[2] But devaluation, particularly when it successfully increases current account credits relative to debits, may well increase money national income. The inflation of income will have adverse repercussions on the balance of

[1] Camille Gutt (Managing Director, 1946–51), address in Minneapolis, 15 Dec. 1947, mimeographed, p. 12.

[2] If, from the standpoint of income-creation, income equals the sum of consumption, investment, government, and export expenditures—$Y = C+I+G+X$—income can remain constant while exports rise (and with devaluation, export value in terms of domestic currency presumably will rise), provided that $C+I+G$ fall by the amount of the increase of $X$. If imports also rise, there may well be an accompanying fall in $C$, even if equal to only a fraction of the import increase. But if $M$ increases less than does $X$, thereby improving the trade balance in domestic currency (if a domestic-currency *deficit* is *not increased* by devaluation, the deficit in terms of foreign currency is reduced), then if $C$ falls by the full amount that $M$ rises, $I+G$ must somehow be curtailed if $Y$ is to be held constant. If $C$ rises, there must be additional curtailment of $I+G$.

From the standpoint of income-disposal, income equals the sum of consumption, saving, taxes, and imports—$Y = C+S+T+M$. If $M$ falls, while holding $Y$ constant, $C$ will rise by the extent that an increase in $S+T$ fails to offset the reduction in $M$. Thus, if devaluation, at worst, does not increase a domestic-currency trade deficit, money national income can remain constant or even fall, but this would very probably require a reduction of $I+G$ and also possibly (very probably, if $M$ falls) require an increase of $S+T$. Some of the foregoing is elaborated in my 'A Note on Some Mechanics of the Absorption Approach', *Weltwirtschaftliches Archiv*, Mar. 1961.

payments, thus tending to cancel the prospective gains from the devaluation. And here is introduced a point persistently pressed by the Fund: devaluation, to be effective, must be supported by contractionary domestic policies.[1] Indeed, the emphasis on restrictive domestic policies is so great that we find it sometimes suggested that we might better rely solely on the domestic policies and forget the devaluation, for the same type of policies required to make devaluation effective can, if pushed sufficiently hard, make devaluation superfluous.[2]

Alterations in exchange rates, then, are not to be employed for day-to-day or month-to-month equilibrating of the international accounts. Nor is it normally even a year-to-year mechanism of adjustment. Perhaps we may deem it a crisis-to-crisis tool.

## II

There are other ways to bring a nation's external payments and receipts into at least nominal equilibrium. Are the pains and costs of adjustment greater under changing exchange rates than under, say, the Procrustean method of direct trade and exchange controls? The Fund *Agreement* stoutly lists as a purpose of the organization the assisting 'in the establishment of a multilateral system of payments in respect of current transactions . . . and in the elimination of foreign exchange restrictions'.[3]

But, of course, the inauguration of the Fund hardly constituted a great leap into a system of unrestricted multilateralism. For one thing, the general preclusion of controls applies only to current transactions; the Board of Governors confirmed in 1956 that, under the *Articles of Agreement*, 'members are free to adopt a policy of regulating capital movements for any reason', 'due regard' being paid to other related provisions, and 'they

[1] See, for example, *Annual Report, 1950*, pp. 22–27.

[2] In an essay written not long after the 1949 devaluations ('Policies to Make Devaluation Effective', in *Money, Trade, and Economic Growth* [New York: Macmillan Co., 1951], pp. 94–101), Camille Gutt argued, in effect, that in order to realize the potential advantages of devaluation, domestic policies must ensure a reduced 'absorption' of $C+I+G+M$: with a given national output, the trade balance will improve by the amount that absorption falls (see p. 158, n. 2, below). But if the reduction in absorption is brought about primarily by domestic contractionary policies, why bother with devaluation? 'I have always said that to make an effective devaluation a country must follow the same bold and determined policies that, taken in time, would have made devaluation unnecessary' (pp. 99–100). But these contractionary policies, which must be followed with or without devaluation, might cause 'considerable unemployment' (p. 99) if undertaken alone. The proper role of domestic policies is not, therefore, to induce a balance of payments improvement directly by deflation, but rather through disinflation to protect a balance of payments improvement made possible by devaluation. 'Devaluation can only prepare the way for an improvement in the balance of payments. It is the policies subsequent to devaluation . . . that will determine whether the improvement will actually be realized. . . . The real sacrifice, which is to reduce home use of aggregate resources, must be made even with devaluation' (p. 101).

[3] *Articles of Agreement*, Art. I (iv).

may, for that purpose, exercise such controls as are necessary'.[1] Secondly, there is the weird 'scarce currency' clause, under which 'limitations' may be imposed on 'the freedom of exchange operations' in a currency which the Fund has formally declared to be scarce.[2] Thirdly, during a post-war 'transitional period' (which has yet to be officially terminated), members are allowed to maintain and to adapt restrictions in order to cope with balance of payments difficulties.[3]

Furthermore, while the Fund has persistently and sometimes powerfully urged progressive (and internationally coordinated) dismantling of controls and discriminatory devices, it has taken an attitude of sweet reasonableness concerning restrictions, particularly in the early post-war period. On occasion it may have been unreasonably sweet. There have been frequent claims, later often conceded in retrospect, that conditions made controls 'unavoidable', 'necessary', and 'essential'.[4] The references to the 'need' for, and 'inevitability' of, controls may almost suggest that, in the absence of controls, the total credits in the balance of payments would not equal the total debits—a consequence which would profoundly wound the aesthetic sensibilities of the statisticians.

The *Annual Report* of 1947 sympathetically notes that

> quantitative import controls and exchange restrictions have appeared to most of these countries [whose economic position was seriously impaired by the war] to be preferable to exchange depreciation. The disequilibrium in their balance of payments is temporarily very large, but it is due more to special factors connected with the war, which may in time be overcome, than to fundamental disparities in costs and prices. In the circumstances, only a very large depreciation would have had a significant effect on imports and, in view of their present limited capacity to export and the intense worldwide demand for goods, such a depreciation would not have added important amounts to the foreign exchange receipts of the countries concerned.[5]

[1] Statement of Board of Governors, 25 July 1956, *Annual Report, 1957*, p. 162. Art. VI (sec. 3) of the *Articles of Agreement* allows members to 'exercise such controls as are necessary to regulate international capital movements', provided that the controls are not exercised 'in a manner which will restrict payments for current transactions or which will unduly delay transfers of funds in settlement of commitments'. For the 'general obligations' of members with respect to restrictions on current transactions, see *Articles of Agreement*, Art. VIII (sec. 2, 3, 4).

[2] *Articles of Agreement*, Art. VII (sec. 3).

[3] Ibid., Art. XIV (sec. 2, 3, 4, 5).

[4] Continuance of controls after the war 'now reflects the inadequacy of a country's foreign exchange resources relative to its needs and the importance of guarding against disturbing capital movements. In most countries there is a severe shortage of goods of all kinds that must be obtained from abroad. In such countries, exchange restrictions are unavoidable for a time in order to assure that the most essential requirements for consumption and reconstruction will be met out of their limited foreign exchange resources.' *Annual Report, 1946*, p. 11. After a strong indictment of controls, the 1952 *Annual Report* agrees that there were considerations which 'compelled countries to resort to restrictive measures', and 'some countries are not yet in a position to abolish restrictions'. We are led to the unexciting 'conclusion' that restrictions are 'appropriate' only if they are 'temporary' and 'if they are necessary for maintaining balance in the external accounts' (pp. 61, 62).

[5] *Annual Report, 1947*, p. 34. At the 1947 annual meeting, Xenophon Zolotas, the Governor for Greece, questioned the Fund's 'policy of accepting without objection the par values communicated by the Member countries. . . . The insistence on highly hypothetical par values

This is not a wholly unreasonable point of view generally, but its emphasis is misdirected, and it is seriously incomplete. The major difficulty in depreciation during the early post-war years was not simply that depreciation would have to be great to be effective, but that depreciation would tend to expand the volume of exports while cutting the volume of imports. In part as there is a case for 'aid, not trade', which makes imports available without the necessity of exports, so there *can* be rationality in utilizing direct controls to balance the accounts through restricting imports (especially if imports are restricted less by controls than by devaluation) and leaving export volume unchanged (especially if the elasticity of foreign demand for domestic exports is low).[1]

Even if it is correctly determined, according to some criteria, that circumstances make controls preferable to depreciation, the job is not wholly done. While there is no scarcity of lecturing by the Fund that proper domestic policies are required to make *devaluation* effective, we are not so often told that precisely the same sorts of policies are in order when *controls* are utilized. With either devaluation or controls, if money income is to be held constant, improvement in the balance of payments requires a reduction in domestic 'absorption' of $C+I+G+M$.[2] If a forced curtailment of imports, with exports unchanged, is accompanied by increased

and the acceptance of them by the Fund not only does not help the development of international trade but, on the contrary, contributes to the adoption of additional trade restrictions and exchange controls; for the maintenance of abnormally high external values of currencies discourages exports and causes a further widening of the gap in the balances of payments. . . . The argument that 'the disequilibrium in the balances of payments is temporarily very large, but it is due more to special factors connected with the war which may in time be overcome than to fundamental disparities of costs and prices' is not sufficiently strong; the determination of par values corresponding more closely to the present economic conditions does not mean that these par values should be maintained in the future if these economic conditions were to change. . . . The eventual argument that in some of the Member countries inflation continues because of budget deficits and so on, and consequently that any readjusted exchange rates will soon become out of line, cannot hold. In such cases the determination of more correct par values in conjunction with other measures . . . can check the inflationary tendencies.' Third session, 15 Sept. 1947, I.M.F. files.

Camille Gutt replied that during the initial post-war period, 'it would have been no use to change those par values because the change in the par values would not have increased at all the exports of the nations concerned. There was a full sellers' market and every country could sell at any price what it produced and could spare for export.' Loc. cit. A year later, E. M. Bernstein, then Fund Director of Research, held that 'an exchange rate still can and still does, by and large, perform the export function', e.g. 'England could always sell more goods by making the price a little bit lower'. But the exchange rate could not at that time perform 'the function of limiting imports'; if the English government were to allow residents to 'buy freely abroad, they would buy so much that it would be quite impossible, even with a cheapening of the exchange rate, to earn enough foreign exchange to pay for all the imports the people want'. Background news conference, 27 Sept. 1948, I.M.F. files.

[1] If the foreign demand is inelastic, controls can achieve the same balance of payments improvement as can devaluation, with a smaller volume of exports and a larger volume of imports. See Allen and Allen, op. cit., pp. 399–402.

[2] With $Y = C+I+G+X$ and, by definition, 'absorption' $(E) = C+I+G+M$, it follows that $Y = E+X-M$, and $Y-E = X-M$.

$C+I+G$ (so that total absorption is constant), then money income will rise, thereby assuring the domestic prerequisites, with a pegged rate, of continued controls.[1]

## III

If exchange controls and other direct manipulations of trade and payments are a diminishing and ultimately vanishing variable in the equation of adjustment, and if exchange rates approximate a constant, just what variables *are* supposed to carry the adjustment load? The answer appears to be twofold: (*a*) largely unassisted evaporation of temporarily disturbing forces, and (*b*) pressure on national incomes.

With respect to the first possibility, the Fund seems to put considerable reliance on waiting out balance of payments strains. If exchange reserves begin to drain away, then prevent both extra-market interference and market correction, and simply wait—and hope that the trouble will go away. If need be, in order to make the waiting feasible, the Fund stands ready to subsidize this breath-holding policy. Beginning in 1951, there has been a series of steps redefining restrictions on the use of the Fund's resources and making the resources more certainly available—through either immediate sales of exchange or standby arrangements, with the quantitative annual limit on purchases sometimes waived, with repurchase of domestic currencies to be made moderately quickly (within some 3 to 5 years), and with drawings up to a modest level very liberally granted but with further drawings allowed only 'in support of a sound program likely to ensure enduring stability at realistic rates of exchange'.[2] The purpose of these 'basic decisions' was to set forth 'more clearly the conditions under which the Fund's resources would be available to its members as a second line of reserves to meet temporary exchange difficulties'.[3]

With a little waiting, some minor balance of payments problems will indeed go away—although they might well disappear even more quickly and with even less cost if exchange rates could move within a wider range. With problems of greater intensity and persistence, mere waiting is not sufficient,

[1] To be sure, controls, in contrast to devaluation, may be 'effective' in manipulating the balance of payments even when inflation is uncontrolled. But on the reasonable dual assumption that inflation *per se* is undesired and that relieving of market pressures on the balance of payments is desired, the exercise of controls does not allow divorce of the problems of internal and external equilibrium.

[2] Per Jacobsson, address at the Brussels Exhibition, 1 Aug. 1958, mimeographed, p. 4.

[3] Ivar Rooth, statement before 14th session of the Economic and Social Council, 29 May 1952, mimeographed, p. 1. It is claimed that the purpose has been achieved: 'The growing awareness of the Fund's functions and an improved understanding of the principles governing the use of its resources have also led an increasing number of members to look to the Fund for assistance in finding solutions for their short-term balance of payments problems, and the use of the Fund's resources as a second line of reserves has thus become well established.' *Annual Report, 1958*, pp. 21–22.

as the Fund acknowledges.[1] In these more severe cases, domestic corrections are required. Which domestic variables are to alter, to what degree, within what limits, in which direction, and in response to what proximate stimuli? There is here no neat answer, running in terms of a discernible and quasi-automatic market *mechanism*. Rather, one can speak only of procedures of consultation between the Fund and the members in question. Perhaps in response to a request for advice, or in connexion with the annual consultations on remaining exchange restrictions,[2] or during consideration of an application for a loan, or through public pronouncements and published or privately communicated studies and reports, or occasionally through a technical adviser assigned to a country for several months, the Fund can exert its influence in the direction of appropriate domestic policies.

Appropriate national policies are the only effective means of solving payments problems. Indeed, one of the most important tasks of the Fund is to provide technical assistance to help members to establish such policies. The Fund can help, encourage, and advise its members. But it is they, and they alone, who can put into force the right policies. . . . The Fund can be the advocate of sound policies and a persuasive force in securing their adoption.[3]

[1] 'The Fund was established primarily to administer a code of fair and liberal exchange practices and to assist countries in following these practices by providing them with needed currencies to meet *temporary* disequilibria in their balances of payments. They would thus have time to correct these disequilibria without resorting to restrictions which, if their use were widely extended, could benefit no one. But, in the postwar situation, most of the trade deficits have not been "temporary". They have instead been of such a character that they were not likely to be corrected during any period in which it would have been reasonable to finance them by allowing access to the Fund's resources.' Ivar Rooth, address at annual meeting of Bankers Association for Foreign Trade, Boca Raton, 22 Apr. 1953, mimeographed, p. 2.

[2] 'Five years after the date on which the Fund begins operations, and in each year thereafter, any member still retaining any restrictions inconsistent with Article VIII, Sections 2, 3, or 4, shall consult the Fund as to their further retention. The Fund may, if it deems such action necessary in exceptional circumstances, make representations to any member that conditions are favorable for the withdrawal of any particular restriction, or for the general abandonment of restrictions, inconsistent with the provisions of any other article of this Agreement. . . . If the Fund finds that the member persists in maintaining restrictions which are inconsistent with the purposes of the Fund . . . the Fund may declare the member ineligible to use the resources of the Fund.' *Articles of Agreement*, Art. XIV (sec. 4), Art. XV (sec. 2*a*).

[3] Ivar Rooth, statement to the [Randall] Commission on Foreign Economy Policy, 19 Nov. 1953, mimeographed, p. 3. 'The basic job of placing each country in a position to restore its international payments is one for which the government of each country has the primary responsibility. That government alone can take the measures to expand its output and to place production on an efficient basis. That government alone can put its domestic finances in order, and thus prevent a chronic dependence on excessive imports or a chronic difficulty in supplying adequate exports.' Camille Gutt, presentation of annual report, *Annual Meeting, 1948*, pp. 8–9.

Some of the dangers and difficulties of trying to impose financial discipline on a country from the outside were illustrated in the summer of 1959, when several South American countries, led by Brazil, indicated powerful resentment against the specification of certain domestic policies as a condition of aid to be supplied by the Fund and the United States. See, for example, *The New York Times*, 15 June 1959, 10:1.

Apparently the analyses of the Fund have been of very broad scope,[1] the advice has been based generally on the verities of 'sound finance', and the opinions of the Fund have been of some appreciable influence. The Managing Director told the 1957 annual meeting of the Fund directors that 'a majority of countries are now succeeding in making monetary and fiscal policy the principal means of dealing with their payments problems', and he suggested that this development is due in large measure to consultations of member countries with the Fund.[2]

The Fund has put continual stress on the dangers of over-exuberant 'full employment' and 'economic development' policies, with the subsequent common necessity of disinflationary domestic policies if balance of payments stability is to be achieved.[3] And much of the interest in the

[1] 'Briefly, the Fund is trying to make possible a ready exchange of national currencies for one another, according to an orderly pattern of rates: that is the way it strives to foster free trade and prosperity for its member countries. This may sound like a rather limited approach to a very broad objective. On the contrary, however, the Fund's concern for a member's currency involves a close study of its whole economic structure: natural resources and their capacity for development; the kinds and quantities of imports and exports; production levels; population changes; wage and hour laws, rationing, price controls and a host of other matters. The Fund's Board of Directors frequently feels called upon to make recommendations on broad fields of governmental financial policy: balancing of national budgets and reduction of state investments, maintenance of high taxes, restriction of bank credit, encouragement of private savings, reduction in the amounts of money in circulation. . . .' Camille Gutt, *The Fund's Unknown Function* (Washington, D.C., Feb. 1949), pp. 1–2. For a summary of the procedure of Article XIV consultations, see *Exchange Restrictions, 1952*, pp. 5–8; for a survey of the exchange of views between the member countries and the Fund during the first series of consultations, see *Exchange Restrictions, 1953*, pp. 2–17.

[2] *Annual Meeting, 1957*, p. 13. With specific reference to exchange restrictions, the Article XIV 'consultations have been a valuable means whereby the Fund and its members have been able to collaborate in achieving the objectives of the Fund. The periodic reviews of the restrictions that still remain and of the justification for their maintenance, together with the advice given by the Fund in connection with the consultations, have played an important part in the progress made in the simplification of exchange systems and the reduction of restrictions.' *Annual Report, 1960*, p. 28. Compare the view of Robert Triffin (*Europe and the Money Muddle* [New Haven: Yale University Press, 1957], p. 128), who has been known to utter a criticism of the Fund: 'The published record may . . . give too gloomy an impression of the Fund's activities in this field. Consultations under Article XIV have developed, quietly and without publicity, a better understanding by each member country of the problems and policies of others, of the real costs and practical limitations of exchange restrictions as a mechanism for balance of payments adjustments, and of possible alternatives to excessive reliance on their use. They may well have exercised a far greater impact on actual decisions and policies than would be suspected from information available to the outsider.'

[3] But while income should be prevented from rising to serious inflationary levels, it should not be allowed to sink to significant deflationary levels. In Sept. 1946 the Executive Board, in response to a British request for interpretation of the 'fundamental disequilibrium' clause (Art. IV, sec. 5*f*), held that avoidance of prolonged unemployment is a condition of equilibrium: '. . . steps which are necessary to protect a member from unemployment of a chronic or persistent character, arising from pressure on its balance of payments, are among the measures necessary to correct a fundamental disequilibrium. . . .' *Annual Meeting, 1946*, pp. 105–6. Later, the Governor for the United Kingdom re-emphasized that: 'Member countries . . . do not wish nor do we intend to seek equilibrium through severe deflation and the accompanying scourge of unemployment. Countries nowadays are committed by

changes in Fund lending policies lies in the greater potential influence of the Fund on domestic policies. *Given* the policy of indefinitely stable exchange rates, there is, indeed, no alternative genuine mechanism of adjustment. But if this is to be the mode of adjustment, one can ask what the Fund does (outside of research and consultative activities—which are not trivial, but which have their main importance in making domestic policies more effective) which the gold standard could not do at least as well.[1]

## IV

The Fund understandably has talked much of major *sustained* problems, *permanent* or *long-range* objectives, and essentially *once-and-for-all* solutions. For example, it has consistently urged the control of inflation; after 1952 or so, there is much discussion of the conditions of convertibility; there are broad references to expanding trade, eliminating discriminations, &c. Less understandably, there is virtually no explicit discussion of *immediate* and relatively *short-run* adjustment. It *is* important that, for example, the United States further liberalize its commercial policy, but—aside from the limited provision of additional exchange resources, the prospect of occasional rate adjustments in accordance with uncertain

national policies and international obligations to maintain high levels of employment.' *Annual Meeting, 1954*, p. 29.

Infrequent, cautious remarks suggest that an appreciable cost of contraction must occasionally be borne in the interest of external balance: 'Widespread unemployment is not at all necessary for avoiding inflation. But if countries are induced to slacken their efforts to eliminate inflation as soon as pockets of unemployment appear in one or another industry, the payments problem may become a permanent one.' Ivar Rooth, address before 14th session of the Economic and Social Council, 29 May 1952, mimeographed, p. 5; also idem, *Annual Meeting, 1952*, pp. 122–3.

[1] 'The rules of the old gold standard are not today accepted as they used to be. There is now a general demand for more monetary management than was compatible with those rules. . . . Whether we like it or not, budget policies are now as important as credit policies in the restoration and maintenance of sound money; and in the declarations of intent which the Fund receives from the various governments when they request the assistance of the Fund, measures of fiscal policy are generally in a position of essential importance. In that way an additional source of credit through assistance from the Fund is becoming available only to member governments that have satisfied the Fund of their intention and capacity to restore balance in their money affairs. The Fund thus helps to restore some measure of that international monetary discipline by which the gold standard in its way maintained balance before the First World War: but it also supplies a measure of credit by which the harshness of the old rules have been somewhat mitigated. Within the measure of its capacity, the Fund thus attempts to formulate certain principles to facilitate the efficient working of the present international monetary system, and to see to it that these principles are applied in practice.' Per Jacobsson, address at the Brussels Exhibition, 1 Aug. 1958, mimeographed, p. 6.

'If the objectives of the U.S. Employment Act [of 1946] are compared with the purposes of the Fund, the latter are seen to be more in conformity with the rules of the gold standard, because of the stress laid on exchange stability [*Articles of Agreement*, Art. I (iii)] and the reference to the need for corrective measures [Art. I (v)].' Idem, Stamp Memorial Lecture, London, 19 Nov. 1959, mimeographed, p. 6.

criteria, and the urging by the Fund of 'proper' economic behaviour—it is not apparent that the Fund provides, or can provide, a perceptible *mechanism* for either 'cyclical' adjustments or 'secular' and 'structural' corrections. It appears that the Fund is striving for the *situation* of multilateralism, nondiscrimination, and convertibility without adequate provision of the prerequisite adjustment *mechanism*.[1]

One can say with considerable assurance what *is* the adjustment mechanism (schematically, at least, even if with less assurance historically) under the gold standard or under an arrangement of freely fluctuating rates. About the best we can do with respect to the Fund is to note what the adjustment mechanism is *not*. It certainly puts little reliance on variations in the exchange rate. Exchange rate alterations are not looked upon as natural responses to ever-changing market forces and as a corrective variable contributing to the never-ending equilibrating of the market; rather, they are in a significant sense passive, a reluctantly condoned, last-ditch acknowledgement of desperate crisis. Nor, under the Fund, do we find emphasis on domestic variables, in the crucial sense of the level of economic activity constantly ebbing and flowing, although prolonged and considerable inflation is resoundingly damned.

What, then, is the adjustment mechanism under the Fund? The Fund manfully defends extant exchange rates, condemns reliance on direct trade and payments controls, and sanctions 'sane' monetary and fiscal policies. All of this not only is no 'mechanism', it has little directly to do with short-run adjustment—except virtually to eliminate the classic adjustment variables.

The Fund scheme of (*a*) stable rates with (*b*) increased international liquidity is acceptable only *if* (1) there are adjustment mechanisms preferable to the alternative of exchange rate fluctuations and *if* (2) these alternative mechanisms will come into play assuredly and promptly, at the least before reserves are exhausted—an exhaustion leading to general collapse of the scheme, imposition of restrictions, or a devaluation which would better have come earlier. These are substantial 'ifs'.

[1] One finds in the Fund literature the repeated observation that the post-war world has been quite different from what was anticipated, and this can account for much of the overwhelming concern, until recently, for 'the' dollar problem. But the question does present itself, what will be the nature of the policies and the strength of the influence of the Fund when the world becomes 'normal'? The Fund may have earned its keep during the last dozen years as a force in support of internal 'stabilization' policies, curtailing exchange controls, &c., but what is the role of the Fund after stabilization, nondiscrimination, convertibility are achieved? And if there is then an active role to be played with respect to balance of payments adjustment, what will be the means of exerting pressure when there are no longer Article XIV consultations and borrowing is small and sporadic? (The Fund's resources could not be made available in the early post-war years because balance of payments difficulties were too widespread and acute; around 1955, it was being explained that the level of transactions was low because balance of payments difficulties were so uncommon and modest in magnitude!)

An observer has remarked that the Fund is too sophisticated an organization to rely on mechanical 'gadgets' for the promotion of its ends. The Fund seems to be essentially an instrument of moral suasion, 'an institution of high moral authority in the field of currency policy, a forum for discussion',[1] buttressed by considerable but scarcely massive resources which are available under prescribed conditions. The discretionary use of moral suasion is, to be sure, a far cry from gadgets; it seems also to be rather a far cry from a system of adjustment.

The Fund is not an organization of 'gadgets', or of 'rules', or of simple reliance on the market. It appears, rather, to be an organization, for the most part, of hoped-for prestige, which can throw the effective weight of its opinion onto the side of refined and responsible domestic and foreign exchange policies, holding inflation and fluctuating exchange rates to be the paramount evils and relying on consultation among members and the Fund to furnish improvised, *ad hoc* solutions of crises. Its prestige, the weight of its opinion, is doubtlessly enhanced by its monetary resources, but these limited resources—and their historically restricted use—cannot alone furnish the basis of its necessary authority, or even of the authority which it seems, in fact, to have achieved thus far. The influence of the Fund must be derived largely from sources more subtle than its financial ammunition.

Much of this is quite intangible; it is unclear to the outside observer; it is not readily summarized in textbooks. But perhaps we should not insist that adjustment can be achieved only by means which can be readily summarized. Perhaps even the notion of 'mechanism' should not be in terms of automaticity.[2] It has been common to complain that the Fund was a noble idea which has not worked out very well. Is it possible that the institution is *better* than the idea? The idea, as finally embodied in the *Agreement*, made little provision for adjustment; the institution may be establishing itself as a significant force for adjustment, even if the force is of nebulous outline.

The test of an arrangement is: does it get the job done better than would an alternative arrangement? Whether or not, on that criterion, the Fund's performance thus far warrants a high grade, the Fund may in the

[1] Statement of Wilhelm Vocke, Governor for the Federal Republic of Germany, *Annual Meeting, 1952*, p. 29.

[2] Indeed, some hold that it is a bit anachronistic to speak in terms of 'the mechanism of adjustment': it is now more appropriate to speak of detailed and discretionary *policy decisions* than of *market adjustments*, with the very notion of 'balance-of-payments problems presuppos[ing] the presence of an official foreign exchange authority' and the measurement of disequilibrium being provided by the 'accommodating' activities of the exchange authority. See Harry G. Johnson, *International Trade and Economic Growth* (Cambridge: Harvard University Press, 1958), pp. 153–5. Even if this does not overstate the deteriorated state of affairs, our questions are still pertinent: how and what does the Fund contribute to the correction of disequilibria, and does the Fund arrangement constitute the best of all possible arrangements?

future succeed decently well—at least as well as any alternative now generally acceptable. If so, I shall not worry much about the expositional difficulties of textbook writers. Indeed, I shall try even to forgive the Fund for its seemingly provincial attitude towards exchange rate policy.

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# COSTS IN RETAIL DISTRIBUTION IN GREAT BRITAIN, 1950–7

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## I

THE appearance of the Census of Distribution for 1957[1] permits us to trace, for the first time, some detailed changes in the distributive trades over a period of years. The more recent Census was neither in coverage nor in tabulation as complete as that of 1950, and various changes in classification make certain direct comparisons between 1950 and 1957 difficult if not impossible. On the other hand, the period 1950–7 possesses a certain unity as far as retail distribution is concerned, representing an essentially orderly development after the abolition of rationing and other disturbing factors of the immediate post-war years. Virtually all the important developments continued in the same direction without reversals, and most of them have, in fact, persisted since 1957. Moreover, the period was long enough and sufficiently settled to invite comparison with the studies of retail distribution between the wars and their conclusions as to the general direction of change.

The present paper is concerned with the changes in the costs of retail distribution, as shown by the Censuses and by other available sources. Before proceeding with this inquiry, however, it is necessary to make some preliminary observations on the general concept of retailing 'costs'.

## II

Two problems are involved here. The first concerns the scope of 'retail distribution'. While some commodities, e.g. motor cars, petrol, and electricity, are not normally sold in shops, for others the costs of distribution are shared between manufacturers, wholesalers, and retailers in varying proportions. The first group is of minor significance for the present paper, since most statistics agree in excluding it from the scope of retailing, even though some of the commodities concerned are close substitutes for others sold in shops, such as paraffin. It is the share of costs borne by the three main types of firm which is of major importance here, for it changed to a considerable extent in the years 1950–7.

The proportion of material resources devoted to wholesaling appears to have declined to a significant extent in this period. This may have been

[1] Board of Trade, *Report on the Census of Distribution and Other Services, 1957* (1958). Additional information has been published in articles in the *Board of Trade Journal*.

the result of by-passing the wholesaling firm on the part of manufacturers, or retailing chains doing their own wholesaling, so that there was, in a sense, less independent and measurable 'wholesaling' altogether, or it may have been the result of a squeeze on wholesaling margins. The former, though important, is unlikely to have been the whole explanation, for the labour employed in wholesaling increased, if anything, faster than the labour engaged in retailing alone: according to the Ministry of Labour

TABLE I

*Earnings of Capital and Labour in Distribution 1950–1 and 1957–8*

| | *Retail distribution* | | | *Wholesale distribution* | | |
|---|---|---|---|---|---|---|
| | *1950–1* | *1957–8* | *Change* | *1950–1* | *1957–8* | *Change* |
| *As percent. of turnover* | | | | | | |
| Gross trading profit | 6·6 | 7·0 | +0·4 | 4·4 | 3·8 | −0·6 |
| Depreciation allowances . . . | 0·6 | 0·8 | +0·2 | 0·3 | 0·4 | +0·1 |
| Net trading profits . | 6·0 | 6·2 | +0·2 | 4·1 | 3·4 | −0·7 |
| Total income* . | 6·6 | 7·0 | +0·4 | 4·3 | 3·5 | −0·8 |
| *As percent. of all incomes* | | | | | | |
| Gross true income . | 11·1 | 11·6 | +0·5 | 6·5 | 6·0 | −0·5 |
| Net true income† . | 12·5 | 12·8 | +0·3 | 7·0 | 6·2 | −0·8 |
| Employee's earnings | 6·3 | 6·35 | +0·05 | 3·7 | 3·55 | −0·15 |

* After allowing for losses and other income.
† Gross true income less depreciation.

annual returns, employment in the whole of the distributive trades rose between May 1950 and May 1957 by 17·3 per cent., while in the trades which can be identified as wholly or mainly retailing, and include all retailing employees except those in coal, building materials, and corn[1] the increase was only 15·9 per cent. in the same period. These figures refer to employees only, and include those unemployed.

Even if employment, i.e. the use of labour, in wholesaling did not decline, there appears to have been considerable pressure on margins and perhaps even on wages in wholesaling in 1957, compared with 1950. For what they are worth in this connexion, the returns of the Commissioners of Inland Revenue for 1950–1 and 1957–8,[2] note the changes (Table I).

[1] i.e. the three categories of food and drink, retail; non-food, retail; and confectioners, newsagents, tobacconists. The figures are for Great Britain.

[2] *Reports of Commissioners of Inland Revenue*, 95th Report (Cmd. 8726) and 102nd Report (Cmnd. 922). Most of the returns quoted were, in fact, made for the previous years, i.e. 1949–50 and 1956–7 respectively, but they have been taken here as close approximations to the calendar years 1950 and 1957, since the returns for 1958–9, which refer to the fiscal year 1957–8, are not yet available, and it seemed best to preserve consistency in the calcu-

If wholesalers' margins fell, manufacturers' distributive costs clearly rose; indeed, the two are close substitutes. Self-service, in particular, stimulated pre-packing, &c., and sales in self-service shops rose from £17 million in 1950 to £1,200 million in 1957.[1] Branding and national advertising campaigns, especially on television, stimulated direct deliveries from manufacturers to retailers and the associated building up of makers' selling organizations. These expenses are not necessarily additional costs borne by consumers, for they are often indispensable for lowering manufacturing costs by larger, or more regular, turnover, but it is part of the task of an inquiry into distributive costs to determine this precise point, namely to what extent reduced costs of 'manufacturing' are achieved at the expense of rising costs in 'distribution'.

Exact measurement is possible neither for wholesalers' nor for manufacturers' distributive costs. Here it is assumed, perhaps optimistically, that the fall in one roughly cancelled out the increase in the other. In consequence, we can concentrate in the rest of the paper on the increase in retailers' costs as a fair approximation to the increase in total distributive costs in the economy.

The second problem concerns retailers' 'costs', in their imperfectly competitive market in which they are free, to some extent, to vary their selling prices.[2] In practice, however, price cuts were restricted by institutional factors such as resale price maintenance, by fear of retaliation associated with oligopoly, or by experience of an inelastic short-run demand curve which made such price cuts not worth while. Retailers thus attempted, instead, to shift their demand curve to the right by advertising or by 'improving' their product, i.e. providing more services. In the inter-war years it was generally assumed that retailing costs as a whole were rising, because margins set by retailers were constantly creeping up to those of the highest-cost firms, the low-cost firms preferring not to provoke a price war by lowering their prices, but to raise their selling costs instead:

> The shop which is prevented from competing with a less efficient one by charging lower prices, tries to beat it by elaborate measures to attract custom, such as home service, display, advertisement and so forth. The queer result is that the costs of distribution of the most efficient shops are increased and sometimes brought to the level of the 'least efficient'. While competition in price will very quickly remove the less efficient, competition for custom will keep them alive by increasing the distributive costs of the more efficient.[3]

Certainly, in the 1930's, 'competition has been present and extremely

lations. According to the National Income Blue Books and other available indices, the differences between 1950 and 1957 were very large compared with the differences between each of these two years and its immediate neighbours.

[1] *Board of Trade Journal*, 4 Sept. 1959.

[2] 'The individual distributive trader's demand curve must, in every instance, be considered downward sloping.' Margaret Hall, *Distributive Trading* (1949), p. 36.

[3] Hermann Levy, *The Shops of Britain* (1948), p. 151.

active, only it has taken the form of a competitive 'bidding up of the costs of retail distribution rather than a competitive reduction of retail prices'.[1] There exists, in other words, a strong Parkinsonian tendency in retailing for costs to rise according to the gross margin available to meet them, and the gross margin in turn is set at a level which allows the higher-cost firms to survive.[2] But while 'profits' thus become an element of costs in all but the very short run, some 'costs', notably rents and rates, tend in the long run to depend on capacity to pay, i.e. the surplus or gross profits of shopkeepers.

There is much economic sense, as well as practical convenience, therefore, in the convention of retailers to speak in terms of 'gross margins', i.e. the difference between the wholesale or invoice cost and the retail price, either of a single commodity or as averaged out over a group of commodities. The 'gross margin', usually expressed as a poundage or percentage of retail prices, thus covers direct costs, overheads, and profits, and is an accurate measure of the 'burden' of retail distributive costs, or the proportion of the national income devoted to retail distribution.

When used for purposes of comparison, however, the 'gross margin' is a useful tool only when viewing similar groups of commodities or retailers buying at identical wholesale prices. Different commodities, or commodities grouped in different combinations, will naturally show different gross margin rates, while multiple retailers who buy at lower invoice cost might well be as efficient as unit shops and yet show a larger gross margin rate, both because the same specific gross margin may be superimposed on a lower wholesale price and because they may perform some wholesaling functions themselves. These qualifications should be borne in mind in the comparisons contained in the pages which follow.

## III

In comparing the returns of the Census of 1957 with that of 1950, the eye is struck at once by the strong indications of rising retail gross margins between those years. For retail distribution as a whole, the average increase was from 22·3 to 23·4 per cent., or by 1·1 per cent. This percentage is by no means negligible: on the total turnover of £7,857 million,[3] it amounts to nearly £86½ million additional costs of retailing in 1957.

A glance at Table II will show that this is no freak result: it is not, for example, merely caused by a relative increase in the weight of trade groups with high gross margins, and a decline in the importance of trade groups

[1] Henry Smith, *Retail Distribution* (1948 ed.), p. 160.

[2] The strongly marked contrary tendency of retailing costs to fall with rising turnover (which we hope to describe in some detail in a forthcoming analysis of 'productivity' in 1950–7) was quite unable to offset this either in the 1930's or the 1950's.

[3] *Census of Distribution*, 1957, table 6.

with low gross margins. On the contrary, the increase is evident in virtually all trade groups, and all types of retailers for whom figures exist, as well as for most trade sub-groups (which are not shown separately for reasons of space). Of 56 available sets of figures, 5 are not comparable as between 1950 and 1957, 10 show decreases, and 41 show increases. The

TABLE II

*Changes in Gross Margins, Wage Payments, Stocks, and Residual Margins in the Retail Trades, 1950–7**

*Non-Co-operative Shops only*

| | *Increase in gross margin as % turnover* | | | *Reduction in wages/salaries as % turnover* | | | *Increase in residual margin as % turnover* | | | *Increase in stock turn* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *I* | *M* | *T* | *I* | *M* | *T* | *I* | *M* | *T* | *I* | *M* | *T* |
| Grocers, Prov. dealers | 0·1 | −0·5 | 0·1 | 0·8 | 2·3 | 0·5 | 0·9 | 1·8 | 0·6 | 1·2 | 2·5 | 1·6 |
| Other food | −2·3 | −2·1 | −2·2 | 1·2 | 2·1 | 0·9 | −1·1 | = | −1·3 | 5·0 | 1·6 | 3·4 |
| Conf. Tob. Newsag. | 1·8 | 2·3 | 1·8 | +0·3 | +0·9 | +0·4 | 1·4 | 1·4 | 1·4 | −2·8 | −2·3 | −2·7 |
| Clothing & footwear | 3·4 | 3·0 | 3·3 | +0·8 | 1·4 | 0·1 | 2·6 | 4·4 | 3·4 | = | −0·1 | 0·1 |
| Household goods | 1·5 | 4·7 | 2·4 | +0·3 | 1·3 | = | 1·2 | 6·0 | 2·4 | 0·5 | 0·2 | 0·5 |
| Other non-food | −0·3 | 1·8 | 0·2 | 0·1 | 2·6 | 1·0 | −0·2 | 4·4 | 1·2 | 0·6 | 0·6 | 0·6 |
| General stores | 5·5 | 4·6 | 5·2 | .. | .. | +0·4 | .. | .. | 4·8 | 0·5 | 0·7 | 0·5 |
| All retail | 0·8 | 1·8 | 1·1 | 0·1 | 1·2 | 0·6 | 0·9 | 3·0 | 1·7 | 0·8 | 0·5 | 0·7 |

* See note 1 below for interpreting this table. 'Independents' (I) are firms with fewer than ten 'establishments' (shops); 'Multiples' (M) are firms owning ten establishments or more; T = total. = indicates 'no change'.

TABLE III

*Estimated Changes in Wages/Salaries as % of Turnover in Co-operative Shops, 1950–7**

| | |
|---|---|
| Grocers, Provision dealers | −1·5 |
| Other food | −1·8 |
| Confec. Tobacconists, Newsagents | +0·5 |
| Clothing and footwear | −0·8 |
| Household goods | −1·2 |
| Other non-food | −3·6 |
| General stores | −1·8 |
| All retail trade | −1·6 |

* Based on wages/salaries changes in equivalent non-co-operative shops proportional to changes in employment, grossed up to add up to the total change in wages/salaries between 1950 and 1957.

main decreases are among 'other food shops' and chemists' goods shops.[1] For co-operative societies, for which only figures for total turnover are available, the increase in gross margin was 0·4 per cent., from 21·4 to 21·8 per cent.

[1] It should be noted that in Table II it has been necessary to estimate, to some extent, the division between 'independents' and 'multiples', and the 'total' columns are, therefore, much more reliable than either of the two constituent parts. The apparent difference between independents and multiples in the wages/salaries columns is probably largely due to faulty allocation between them.

A general increase in retail margins means, other things being equal, an increase in the proportion of national resources devoted to retailing. Neglecting the wholly implausible possibility that all the retailers' outgoings have increased so much more in price than the commodities they sell, so that the increased margins (which are differences in the prices of the goods sold) really represent fewer actual resources, such as labour, sites, bricks and mortar and fittings, it appears that the tendency noted and deplored by economists in the inter-war period,[1] of more and more shops devoting an increasing proportion of the national outlay to retailing services, has been resumed again in the more normal peace-time years since 1950, after the brief enforced reversal during the war years.

The gross margin contains both the retailer's costs and his profits. Which of these two components has been responsible for the rise since 1950? Our understanding of the developments in retailing in recent years, and any policy proposed to affect the retail trades, will largely turn on the answer to this question.

## IV

The Census allows us to compare only two sets of costs, one directly and one indirectly: the wages and salaries bill (termed 'wages' for convenience in the discussion below) on the one hand, and the level of stocks on the other. It will be seen from Tables II and III that wages, as a proportion of sales, have had a downward tendency. Again, the picture is not quite uniform, and there have been increases in wages costs among confectioners, tobacconists, and newsagents (forming one trade group), among general stores (where classification has been changed since 1957 and comparisons can therefore not be made with confidence), and among women's wear shops, furniture shops, ironmongers, and jewellers, all of them trade sub-groups not separately shown in Table II. Among the total of 107 trade groups and sub-groups, 14 could not be compared because of changes in the classification, in 24 wages were up as a proportion of sales, and in 69 they had fallen. The overall drop in wages costs of 0·6 per cent. is equivalent to about £45 million on the total turnover of £7,798 million.[2]

These figures actually under-state the drop. For in retailing, an exceptionally large proportion of persons engaged consists of 'working proprietors and unpaid helpers', whose remuneration is not included in the wages bill. In the Census Report for 1950, the wage bills of shops without working proprietors and unpaid helpers were listed separately,[3] and if this practice had been followed in 1957, direct comparisons could have been made. As it is, only the overall figures can be compared, but these are

[1] Henry Smith, op. cit., p. 160; Hermann Levy, op. cit., p. 16.
[2] *Census of Distribution, 1957*, table 5.
[3] *Census of Distribution, 1950*, vol. ii, table 27.

bound to be affected by changes in the proportion of persons employed but not receiving a wage.

Between 1950 and 1957 the proportion of working proprietors and unpaid helpers among all persons engaged in retailing (counting among the employees part-timers as one-half of full-timers) has dropped from 36 to 34·6 per cent.; while the total numbers engaged have increased by 13·4 per cent., working proprietors have increased by only 6·5 per cent.[1] This

TABLE IV

*Employment in Retail Distribution, 1950 and 1957**

| | % *of total employment* | | *Change in numbers employed* |
|---|---|---|---|
| | *May 1950* | *May 1957* | *1950–7* |
| *Monthly return:* | | | |
| Males | 46·5 | 39·9 | −11·2% |
| Females | 53·5 | 60·1 | +16·3% |
| Total | 100·0 | 100·0 | +3·6% |
| *Annual returns* (incl. unemployed) | | | |
| Males under 18 | 4·1 | 3·8 | +8·0% |
| Males 18 and over | 41·1 | 35·9 | +1·2% |
| All Males | 45·2 | 39·7 | +1·8% |
| Females under 18 | 9·4 | 9·2 | +13·2% |
| Females 18 and over | 45·4 | 51·1 | +30·7% |
| All females | 54·8 | 60·3 | +27·7% |
| Total | 100·0 | 100·0 | +15·9% |

* For the groups included see p. 167, note 1 above. Source: *Ministry of Labour Gazette.*

reinforces the tendency of the falling wage proportion noted above, for it means that the smaller wage ratio is paid to a larger proportion of the work force, so that a larger residual is left to be shared between a smaller number of working proprietors and the owners of the capital.

A digression may be made at this stage to note two subsidiary points. The first is that the fall in the proportion of unpaid helpers and working proprietors was accompanied by a quite disproportionate increase in the number of part-time employees: over two-thirds of the total increase in the persons employed in retail distribution were made up of part-timers, who increased their share of the labour force from 14·7 to 21 per cent. between 1950 and 1957. If the wages of part-timers were lower, per unit of output, than those of full-timers then the fall in wage costs per £1 of

[1] It is immaterial to this argument that this may merely be the result of differences in classification of the same persons in 1950 and 1957, for the remuneration of everyone classified as employee would have to be included in the annual wage bill, while working proprietors would be remunerated out of profits. In any case, the decline of the independent retailer, and his replacement by a salaried branch manager, is a reasonable assumption for 1950–7.

turnover may be in part explained by this change; it might be so particularly if most of the new part-timers were women.

The Ministry of Labour returns for Great Britain confirm that most of the additional employees were, in fact, females (Table IV). It may well be that adult women, at wage rates of 75 per cent. or less of equivalent male labour, could be used to replace men at a more favourable ratio than 4:3 and that their employment contributed to the reduction in the total wage bill. The changing composition of the labour force does not, however, alter the fact that a fall in wages cost has occurred.

Secondly, and quite distinct from the possible fall in wage per 'unit' of labour employed, the volume of sales per employee has also increased between 1950 and 1957. The change in the sales volume per employee (part-time worker treated as equivalent to half a full-time worker) was as follows:[1]

| | *Index 1957* (1950 = 100) |
|---|---|
| Independents (1–9 shops) | 116 |
| Multiples (10 shops and over) | 106 |
| Co-operative societies | 102 |

The causes for this favourable change cannot be pursued further here, except to note that, as will be made clear below, they rest largely on a considerable substitution of capital for labour in retail distribution in this period.

To return to our main theme, it is evident that if total gross margins increase while one substantial and measurable item of costs generally falls, the 'residual' margin, out of which the remaining costs have to be met, will have increased by the combined differences of the other two. The changes in 'residual margins', accordingly, are found to be quite substantial (Table II) and over the retail trades as a whole amounted to 1·7 per cent., or, on a turnover of £7,800 million, to some £133 million. This sum was additionally available to retailing firms, over and above the increases in prices and turnover between 1950 and 1957. The only important exceptions to this widespread rise in 'residual margins' were to be found among some of the 'other food' groups, and among ironmongers. Of 77 sets of figures, 6 were non-comparable or equal, 17 showed falls, and 54 showed increases.

## V

For the other cost item noted in the Census, the holding of stocks, no direct percentage figures are available. The cost of holding stocks (as

[1] The volume index is based on separate price indices for each trade group and sub-group, combined with similarly detailed employment indices. Lack of space forbids a fuller discussion of the bases of these indices here, but we hope to publish elsewhere a separate account of them.

distinct from the costs of having stocks deteriorate or become obsolescent) may easily be exaggerated, but stock holding certainly involves some costs. Table II, again, shows the changes in terms of 'stock turn', i.e. the annual turnover divided by the end-year stocks, so that an increase in 'stock turn' means a faster turn and, therefore, lower stockholding costs, on any given turnover. It will be seen that only one trade group, 'confectioners, tobacconists, and newsagents', showed an increase in cost on that account. That group, indeed, shows increased costs for both labour and stocks, and substantially increased margins. There is also a very slight adverse change in the stock turn of multiple clothing and footwear retailers.

In this matter of stock turns, however, the trade group figures hide some important differences among sub-groups, particularly in the 'other food' group. Here are the complete figures, for all retailers combined (there are no important differences between independents and multiples):

TABLE V

*Stock turns in the Food Trades, 1950 and 1957**
(*Non-Co-operative shops only*)

| | *1950* | *1957* | *Change* |
|---|---|---|---|
| Grocers and provision dealers . . | 12·9 | 14·5 | +1·6 |
| Dairymen. . . . . | 76·5 | 63·3 | −13·2 |
| Butchers . . . . . | 133·6 | 105·7 | −27·9 |
| Fishmongers, poulterers . . . | 159·8 | 148·2 | −11·6 |
| Greengrocers, fruiterers . . . | 52·7 | 43·9 | −8·8 |
| Bread and flour confectioners . . | 26·0 | 40·4 | +14·4 |
| Off-licences . . . . . | 7·4 | 7·6 | +0·2 |
| Other food shops . . . . | 18·7 | 19·9 | +1·2 |
| Total, other food retailers . . | 34·0 | 37·4 | +3·4 |
| All food retailers . . . . | 18·2 | 20·2 | +2·0 |

* *Census of Distribution*, 1957, table 7.

The improvement in the 'other food retailers' of 3·4 is seen to be a freak result, since the largest groups among them, with the exception of bread and flour confectioners, all show very large decreases. The positive figure for all 'other food retailers' is the result of an internal shift of weights, from sub-groups with a generally lower stock turn to sub-groups with a generally higher stock turn. The substantial change in the stock position caused by the ending of rationing, zoning, and other relics of war-time control should be noted—the carrying of low stocks by retailers is a benefit of rationing which is often overlooked.

Over retailing as a whole, however, stock turn improved slightly in

1950–7.[1] Moreover, retailers had to find large sums for additional stock values in 1950, but relatively small sums in 1957 only. The details were as follows:[2]

| *Census figures* | *1950* | *1957* |
|---|---|---|
| Stocks at beginning | £498·8 mn. | £802·5 mn. |
| „ „ end | 572·4 | 850·6 |
| Increase | 73·6 | 48·1 |
| As % of turnover | 1·5% | 0·6% |
| *National Income figures:* | | |
| Stocks at beginning | £512 mn. | £790 mn. |
| „ „ end | 589 | 837 |
| Increase | 77 | 47 |

The two sets of figures (which do not cover quite the same period, the Census year ending in April) were thus reasonably close. If retail stocks appreciated at about the same rate as all stocks and work in progress in the National Income Blue Book, the increase due to price change was about £67 million in 1950 and £10 million in 1957, the remainder being due to a physical increase of stocks. Some of the price increases were, no doubt, passed on to consumers, stock appreciation being then a clear gain to the retailer, but the rule was to sell off each slice of stock at the appropriate prices. In any case, any gain from stock appreciation would already be included in the gross margin by the method which the Census used to arrive at gross margin rates. Bearing in mind the general 53 per cent. increase in turnover, retailers thus had available in 1957 some £50 million more in residual margins than they had in 1950.

We thus have, to sum up the information so far, increased gross margins, and lowered labour and stock costs since 1950, adding a sum of the order of magnitude of £200 million to the disposable revenue of retailers, over and above the increases due to price rises and enlarged turnover, as compared with 1950. Has this been expended in costs not listed so far, or retained as profits?

## VI

Let us turn first to costs which may have increased more than in proportion to turnover at current prices. Since retail turnover, as enumerated by the Census, increased from £5,100 million to about £7,800 million, or by 53 per cent., only costs which rose by more than 53 per cent. would add extra burdens per £1 of turnover to the retailers' budget. Advertising and rents and rates are two costs which are likely to have increased to this extent.

[1] On the other hand, interest rates were higher in 1957, and this would affect particularly those retailers who depend on short-term loans.

[2] *Census of Distribution, 1950*, vol. 2, table 24; *Census of Distribution, 1957*, table 6; *National Income, 1959*, table 60.

Between 1950 and 1957 several restrictions on advertising expenditure were removed, including those on the use of paper (1950), electric signs, newsprint, and others. Advertising in the intervening years quickly reached and surpassed the pre-war level and certainly grew faster than retail sales. The absolute figures, however, are not very large. Reliable estimates are difficult to obtain, and the best available figures for expenditure in advertising by retailers are those for the following three years:[1]

| | |
|---|---|
| 1948 . . | £22·3 million |
| 1952 . . | £40·7 million |
| 1956 . . | £52·2 million |

Between 5 and 10 per cent. should be deducted for the salary component of internal display expenditure included in this total, which is already accounted for by the wages and salaries paid by retailers, but the figures are probably not accurate enough to warrant such refinements. Assuming an expenditure of £30 million for 1950 and £56 million for 1957, the excess over the warranted 53 per cent. increase is about £10 million.

Rents and rates represent a more serious cost item. There has been re-rating of commercial property in our period, and rents have at least kept in step with turnover. Potentially, here is a much larger source of cost increases, and many individual stores have been hard hit.

According to the National Income Blue Book, total rates collected were £337 million in 1950, £616 million in 1957; in the financial years ending April and May, respectively, the rates received for England, Wales, and Scotland were £322·4 million and £598·4 million respectively.[2] Within these totals, the share of shops was substantially increased by the valuation changes of April 1956. For England and Wales alone, the proportion of rateable value represented by shops rose from 10·74 to 14·29 per cent.[3] Since then, however, rating charges have tended to favour shops, and the three relevant categories of 'shops assessed with private dwellings', 'shops, including banks in shopping areas, cafés', and 'markets' accounted for 14·4 per cent. of total rateable value in England and Wales on 1 December 1955, 13·8 per cent. on 31 March 1957, and 12·1 per cent. on 1 April 1958. While proportion of rateable value only gives a rough indication of proportion of actual rates borne because of the differences in rates in the £1 in different areas, we shall probably not be far from the truth if we assume rates of 10·74 per cent. for 1950 and 13 per cent for 1957, a rise of 2¼ per

[1] Rodney Silverman, *Advertising Expenditure, 1952* (Advertising Association, 1954), p. 30; Ralph Harris and Arthur Seldon, *Advertising in a Free Society* (Inst. of Econ. Affairs, 1959), p. 204.

[2] Northern Ireland is excluded from the Census of Distribution also.

[3] Ministry of Housing and Local Government: *Distribution of Rateable Value* (Cmd. 9718, 1956), p. 3; also *102nd Report of Commissioners of Inland Revenue for year Ending . . . 1959* (Cmnd. 922, 1960, table 133, p. 144).

cent. Applying this figure to the total levied, rate payments by shops appear to have increased from £36·2 million to £80 million, or some £24½ million more than a mere increase in proportion to turnover would have warranted.

It is not possible to offer anything but guesses on the changes in shop rents paid. Any more than proportionate increases must, however, be offset against some long leases in which it has not yet been possible to raise rents in line with turnover. They have also to be averaged out over property owned by retail firms themselves, in which rent increases, if any, appear as increased receipts elsewhere.

Increased rates have to some extent also been balanced by falling direct taxes (per £1 of turnover): it goes without saying that if 'normal' profits are counted as part of costs and are budgeted for in the setting of gross margins, direct taxes will equally be taken into account. By contrast, changes in expenditure taxes and subsidies were of relatively minor importance when measured against turnover. The main groups of commodities fared as follows:[1]

| | *% of turnover* | |
|---|---|---|
| | *1950* | *1957* |
| *Expenditure taxes* | | |
| Food | 1·5 | 1·1 |
| Alcoholic drink | 49·5 | 43·2 |
| Tobacco | 79·0 | 73·0 |
| Clothing | 7·4 | 4·3 |
| Durable household goods | 13·2 | 14·2 |
| Other household goods | 11·3 | 7·6 |
| Other recreational goods | 12·5 | 13·7 |
| Chemists' goods | 25·2 | 23·0 |
| Other goods | 29·5 | 23·3 |
| *Subsidies* | | |
| Food | 13·8 | 6·4 |

The only significant changes are those affecting alcoholic drink (in large part not retailed in 'shops'), tobacco, and the food subsidies. In any case, the effect of these changes on gross margins is not clear. Reduced subsidies as such probably cause no change in gross margins at all; reduced taxes may be in part absorbed by rising margins, and certainly would reduce stock-holding costs, though not necessarily to the retailer, who may enjoy short-term credit from wholesaler or manufacturer. In sum, the influence of this factor can probably be ignored. Similarly, it is most unlikely that any more than proportionate increases in the price of lighting or heating have played a large part in the raising of the residual margins.

[1] *National Income, 1958*, tables 26 and 30.

## VII

There are three major destinations of the increases left: fixed capital expenditure, hire-purchase and other deferred payment systems, and profits. The servicing of newly incurred costs and fixed capital will certainly account for an appreciable part of the additional residual margin, though, again, it is not possible to provide any accurate statistics. Gross fixed capital formation in distribution has grown as follows since 1950:

TABLE VI

*Gross Fixed Capital formation in Distribution**
*(including wholesaling and road goods transport, £ million)*

| | *1950* | *1951* | *1952* | *1953* | *1954* | *1955* | *1956* | *1957* |
|---|---|---|---|---|---|---|---|---|
| Buildings and works . | 61 | 64 | 73 | 77 | 101 | 131 | 169 | 193 |
| Vehicles, ships, and aircraft . . . | 61 | 74 | 79 | 94 | 115 | 155 | 158 | 150 |
| Plant and machinery . | 69 | 73 | 69 | 71 | 88 | 107 | 100 | 111 |
| All fixed assets . . | 191 | 211 | 221 | 242 | 304 | 393 | 427 | 454 |
| At 1954 prices . . | 232 | 288 | 217 | 240 | 304 | 381 | 394 | 401 |

* *National Income, 1958*, tables 59, 60.

In money terms, an increase of 53 per cent. in turnover was accompanied by an increase of 138 per cent. in capital expenditure; in real terms, an increase of some 15–16 per cent. in retail turnover at 1954 prices was accompanied by an increase of 73 per cent. in fixed capital expenditure. If the amounts spent on vehicles are a sufficient guide, the road goods transport element in these capital costs did not rise out of proportion: the figures clearly reflect the rising capital expenditure of retail distribution.

There has, in fact, been an investment boom in retail distribution in the years 1950–7, evident to anyone walking with open eyes through city centres or new housing estates. Up to 1953 its progress was slow: the acceleration began with 1954 and was particularly marked in 1954 and 1955. In 1956 and 1957 the building boom continued, though the expansion in the other 'fixed assets' was halted.

Since buildings are normally depreciated over 40 years, and of the other 'fixed' assests only vehicles are depreciated over a shorter period than 8 years, it is to be expected that the net investment element in the figures shown in Table VI increased faster than the total gross sums. In the years 1948–53, years of relatively low increases in gross investment, the 177 quoted retail companies showed £50·2 million gross investment, of which £32·3 million was depreciation and only £17·9 million, or just over one-

third, net increase in 'tangible fixed assets'.[1] These quoted companies were not necessarily representative of the retail trade as a whole, but even if they are only approximately indicative, it would follow that a relatively slow growth of the major element in a series like that of gross investment shown in Table VI must indicate a very rapid growth indeed of the minor element. Thus, if we assumed replacement and net investment in 1950 to be as 2:1, and replacement to grow only in proportion to total retail trade, net investment in *constant price* terms, on the figures of Table VI, would have grown from £77 million to £221 million, or almost threefold.[2]

A very large part of these additional investments were financed out of the industry's own gross margins. Even the 177 quoted companies studied by Mr. Evely for 1948–53 only obtained 15 per cent. of their capital from new issues. By contrast, the contribution of their own net savings to financing the increase in net assets was 67 per cent., a higher proportion than that for 'all industries'.[3] These were the largest and best-known firms, and the participation of outside investors in other retailing firms will be much smaller; similarly, the growing practice among some rapidly expanding retailing firms of selling their fixed assets and leasing them back in order to obtain further finance is unlikely to have been copied extensively by the more numerous smaller firms.

Much of the additional capital was used to replace labour: every conversion to self-service, for example, raises capital costs more than in proportion to turnover, and labour costs less than in proportion. The expansion in capital was, however, much larger than could be accounted for by this reason alone; much of it represented the provision of additional 'services' for a given turnover. The finance of higher rates of capital investment is likely to be associated with a tendency on the part of the firms concerned to increase gross margins. For one thing, the firms will have to make increased provision for servicing debt, where capital is borrowed, and for depreciation. Moreover, in a period of rapidly increasing capital expenditure (and this is particularly relevant to the years from the mid 1950's in distribution) they must be expected to seek to finance this increased expenditure at least in part by a deliberate attempt to increase their current net surpluses.

Our second destination of the additional sums available to retailers, hire-purchase and other deferred payments, is likely to raise gross margins substantially at current interest rates, wherever the capital is provided by the retailing organization itself. The Census of 1957 (section IV)

[1] Brian Tew and R. F. Henderson, *Studies in Company Finance* (Cambridge U.P. 1954), p. 242.

[2] This is, of course, only an illustration of the *rate* of increase, not an estimate of absolute quantities: the figures include wholesaling and road transport.

[3] Op. cit., p. 250.

provides some detailed accounts of such trade, but since no estimates of comparable accuracy are available for 1950, it is not known how far this form of trading has expanded between 1950 and 1957.[1] Higher interest rates would, however, clearly help to increase margins. In 1957 total sales on these extended credit terms[2] amounted to £617·7 million, of which £50 million was financed by outside finance houses.[3] This trade of £568 million of potentially larger retail margin was, however, spread very unevenly among the different trade groups. The three main groups of food retailers and of confectioners, tobacconists, and newsagents show virtually no extended credit at all, and there are very low figures for 'other non-food retailers'. In clothing and footwear the average proportion of sales made on extended credit terms was 7·2 per cent. The main incidence of these sales, however, was among household goods retailers (especially furniture, radio and electrical goods, cycles, &c.) and among mail order houses in the 'general stores' group.

It will be instructive at this point to return to Table II and its broad comparisons in residual margins. It will be seen that the increases in the grocery group is more than cancelled out by the fall in the other food groups: food sales as a whole showed falling residual margins between 1950 and 1957. Among confectioners, &c., and 'other non-food' the increases are small. They are largest among clothing and footwear, household goods,[4] and in the general stores group in which there has been some reclassification. In view of this close correspondence between extended credit and higher residual margin, it is hard to resist the conclusion that the additional expenditure on distribution in 1957 was in appreciable measure the result of additional hire purchase and deferred payment charges: the customer paid directly for the additional capital required, in a form which statistically increases the gross margin, as measured in the Census.

[1] Cf. Stacey and Wilson, pp. 314, 363.

[2] But excluding check trading, in which the interest is paid to the check trader, not the retailer.

[3] *Census of Distribution, 1957*, p. 41 and table 12.

[4] Further detail in the household goods group shows closer correspondence:

| | *All retail except Co-operatives (% of turnover)* | | | |
|---|---|---|---|---|
| | *Increase in gross margin* | *Reduction in wages* | *Increase in residual margin* | *Proportion of sales on credit terms %* |
| Furniture shops . . . | 3·2 | +0·8 | 2·4 | 37·7 |
| Radio, elec. goods shops . . | 2·3 | 1·9 | 4·2 | 42·7 |
| Cycle, pram shops . . . | 1·9 | 0·7 | 2·6 | 30·5 |
| Ironmongers, hardware shops . | 0·2 | +0·4 | −0·2 | 1·5 |
| Gas showrooms . . . | 3·8 | N.A. | N.A. | 64·4 |
| Elec. „ . . . . | 0·7 | N.A. | N.A. | 60·6 |

## VIII

Finally, there remains the level of profits. Some of the figures noted above, especially the large increase in self-financed capital expenditure, clearly point to a buoyant profit level, but more direct estimates are hard to come by. The Census contains no profit figures and the National Income Blue Book returns, it was pointed out above, cannot be used for retailing alone. The returns of quoted companies published by *The Economist* show, however, very distinct changes between 1950 and 1957. Unfortunately, they cannot be related to turnover, but the relationship with other indices makes the direction of the movement quite clear:[1]

TABLE VII

*Returns of 'Shops and Stores' Companies, 1950 and 1957*

| | *1950 (62 Co.s)* | | *1957 (56 Co.s)* | |
|---|---|---|---|---|
| | *£ million* | % | *£ million* | % |
| Dividends paid out on ordinary capital | 6·7 | 14·5 | 28·8 | 28·8 |
| Dividends paid out on preference capital | 1·8 | 3·8 | 1·6 | 4·15 |
| Dividends retained by subsidiaries | 2·0 | .. | 7·4 | .. |
| Loan interest paid out | 1·1 | 4·4 | 1·6 | 4·7 |
| Gross trading profits | 54·4 | 23·5 | 127·8 | 30·5 |
| Trading assets* at balance-sheet valuation | 231·4 | | 417·2 | |
| Stocks | 70·1 | .. | 113·6 | .. |
| Gross trading profits as % of stocks | .. | 78·0 | .. | 112·0 |
| Total income | 57·0 | 20·4 | 132·3 | 29·5 |
| Income distributed | 11·6 | | 39·3 | |
| Ordinary capital | 46·4 | 31·9 | 100·1 | 50·0 |
| Total capital, incl. minority interests | 145·2 | | 200·1 | |

* Fixed assets + trade investments + stocks. The excess of debtors over creditors cannot be calculated for 1950. In 1957 it was about £23 million.

Gross and net profits increased enormously, whether measured against nominal capital, against trading assets, or against stocks alone. While the trading assets increased by 80 per cent. the nominal capital increased by only 38 per cent. and the whole of that increase was in equity capital alone.

These companies form an exceptional group in several respects, not least in their commercial success in recent years, and it would be misguided to draw any very firm conclusions from their returns for the retail

[1] Neither 1950 nor 1957 was a freak year: the changes between them were gradual and consistent.

trade as a whole. They do, however, confirm rather than disprove the general impression of rising prosperity and profits in retailing between 1950 and 1957.

The Inland Revenue returns further confirm this trend. For 'retail distribution', gross true income rose from £340 million to £571 million, or by 68 per cent., and net true income rose from £308 million to £511 million, or by 66 per cent. This compares with an increase in the Census figure of turnover of 53 per cent., and shows also a more than proportionate improvement if measured against turnover recorded by the Commissioners, and if measured against the earnings of other sectors in Table I above.

## IX

Our conclusion must be, then, that the period 1950–7 was one of prosperity in most retail trades, in which retailers succeeded in widening, to a marked extent, their gross margins in relation to total turnover. At the same time, labour costs and costs of stock holding fell, so that firms had an additional income of perhaps £200 million in 1957, over and above the increases caused by the rise in prices and rise in real turnover between 1950 and 1957. There were, however, significant variations between different trades.

This additional income was spent on advertising (perhaps an extra £10 million over and above the increase warranted by the increase in turnover), on additional rates, increased by perhaps £24½ million on the same basis, on increased rents, on providing for a very much enlarged capital, used principally for fixed equipment and financing hire purchase and deferred credit sales, and on distributed profits (plus tax).

The owners of capital in the distributive trades thus greatly improved their position in the 1950's. A constant rate of profit per £1 of turnover, when turnover increased by 53 per cent. in seven years, would alone have been a satisfactory return in view of the fact that fresh capital (as distinct from surplus ploughed back) clearly amounted to much less than an additional 53 per cent. In the event, profits per £1 of turnover actually increased in this period, absorbing some of the enlarged gross (and 'residual') margin.

There is no doubt, however, that most of this increase went, not to proprietors as profit, but to the consumer as additional 'services'. In most cases it is extremely doubtful whether the consumer was given a choice as to whether he wished to pay for these additional services. In the Parkinsonian economics of retail distribution the consumer is not normally offered a choice of extra services at higher prices, or no extra services at lower prices: the low-cost firm offers extra 'services' at identical prices, and naturally finds the consumer willing to have them on those terms. In

this comfortable world of retailing, then, there is a strong presumption that the inter-war trend of rising distributive costs has continued since 1950. Technical improvements of a cost-reducing tendency have been far too weak to counteract this trend: indeed, the market conditions do not offer very strong inducements to invest in cost reductions.

The best hope for future cost reductions lies in the further expansion of new forms of retail enterprise, e.g. supermarkets and multiples, at the expense of the more traditional shop. Some of these retailers are prepared to break unwritten laws by price cuts based on cost reductions, while their invoice costs are generally also much lower, producing an altogether more favourable price for the consumer which does not necessarily appear as a reduction in gross margins. The Censuses of 1950 and 1957 show, in fact, that there has been a great expansion between those years of multiple retailers, self-service stores, bazaar stores, mail order houses, and other unconventional retailers. But that is another story.

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# INFLATION AND GROWTH: SOME LESSONS TO BE DRAWN FROM LATIN-AMERICAN EXPERIENCE

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ARGENTINA and Chile are only two of many Latin-American countries which have experienced considerable inflation in post-war years; but whilst some of the others have also experienced satisfactory economic growth, the same can hardly be said of them. As Table I shows, in the decade 1946–55, real product *per capita* in both countries rose by no more than ½ per cent. per annum, as against, for instance, a near 4 per cent. rise in Brazil, Venezuela, and one or two others.

TABLE I

*Economic Growth and Inflation: Latin America 1946–55*

| | *Increase in real product per capita* (% *p.a.*) | *Rise in cost of living* (% *p.a.*) |
|---|---|---|
| Argentina . . | 0·5 | 44 |
| Brazil . . . | 4·0 | 28 |
| Chile . . . | 0·5 | 120 |
| Colombia . . | 3·5 | 13 |
| Cuba . . . | 2·8 | Prices fell |
| Dominican Republic . | 3·5 | 1 |
| Ecuador . . . | 2·8 | 3 |
| Guatemala . . | 2·3 | 4 |
| Honduras . . | 2·0 | 5 |
| Mexico . . . | 2·3 | 10 |
| Paraguay . . | 1·5 | 120 |
| Peru . . . | 4·1 | 22 |
| Venezuela . . | 4·0 | 3 |

SOURCES: U.N. *Statistical Year Book 1957*; U.N. *Statistics of National Income and Expenditure* (Statistical Papers, Series H, No. 9); U.N. *Economic Survey of Latin America.*

Inflation in under-developed countries is sometimes of course the deliberate result of government economic policies aimed at raising the rate of investment above what it might otherwise be in an environment of price stability, in the hope, thereby, of accelerating growth. Such policies may have played a part in the inflations of Argentina and Chile and other Latin-American countries, but it is doubtful whether they are the main cause. Alternatively, inflation can be simply the consequence of weak and ineffectual control over the monetary system, particularly in a situation of

strong industrial or political pressures for higher incomes. But it can also stem from external pressures over which the domestic government has no direct control but which, none the less, force the government either to accept some inflation or forgo favourable conditions for growth. It is well recognized, for instance, that the economies of many under-developed countries (those of the Latin-American region are conspicuous examples) are heavily biased towards the export of one or very few primary products, usually of an agricultural nature. Sharp swings in the prices of these products, produced by inelasticity of demand and supply, introduce instability into monetary systems, particularly when, as is typically the case, both the supply of money and fiscal revenue are closely geared to foreign exchange earnings. Moreover, as we shall argue in a moment, fluctuations in export prices and receipts may, in certain circumstances, produce not merely fluctuations in incomes and prices, but a persistent pressure towards inflation. It is not surprising, therefore, that many under-developed countries feel the need to reduce their dependence on primary products, the steps they have to take usually involving them in reducing their dependence on agriculture and in increasing industrialization. Unfortunately, necessary as it is in the long run, industrialization itself may create problems of monetary instability in the short run. It will be argued in what follows, for instance, that if industrialization is carried on without regard to the rate at which agriculture is developing, acute and persistent inflationary pressures may be set up which are difficult to contain by normal fiscal and monetary policies. Thus, in striving to avoid one difficulty, under-developed countries may find themselves in yet another.

In common with other Latin-American countries, Argentina and Chile have been afflicted with fluctuations in their terms of trade, which have affected their growth and contributed to inflation. At the same time, however, neglect of agriculture has probably been as important an inflationary force as any. In fact, a study of the process of inflation in Argentina and Chile is valuable because it illustrates very clearly the relationship between many aspects of the problem—namely inflation, the external terms of trade, rapid industrialization, and lagging agricultural development. We find very well brought out:

(1) the character of inflation and growth when external forces are proving favourable;
(2) the severe inflationary consequences that may follow a worsening in the terms of trade, particularly when the earlier gains have been directed largely to the promotion of industry to the neglect of agriculture;
(3) the difficulty of checking these inflationary consequences without at the same time checking growth; and

(4) the rather paradoxical result that steps which eventually have to be taken to alter the fundamental imbalance of the economy that has been allowed to develop, tend, at first, to accelerate rather than dampen inflation.

It will of course be impossible within the confines of a short article to give a complete account of post-war growth and inflation in Argentina and Chile, or to develop the points we have mentioned above in any detail. But a short theoretical analysis of their nature is possible, the aim being to throw some light on the connexion between inflation and growth in under-developed countries. Reference will be made to developments in Argentina and Chile, however, in the hope that the relevance of the analysis to their experience will be made clear.

We begin by describing briefly how fluctuations in the terms of trade may produce persistent inflationary pressure: we then go on to examine the process by which a lack of balance between agricultural and industrial development may also cause prices to rise.

It is obvious that an under-developed primary product exporter may gain very substantially from a rise in its export prices and an improvement in its terms of trade, provided these are produced by increasing demand overseas. Economic development stands to benefit, largely through favourable effects on investment. In the first place, real income is made to rise faster than real output, and whilst the benefit can obviously be taken out in the form of higher real consumption, the opportunity is at least presented for higher saving and capital formation, without further sacrifices of consumption being necessary. In the second place, the capacity to import is raised, since the volume and price of primary products will rise together when demand for them is expanding. The capacity to import is usually of immense significance for under-developed countries since, in the early stages of development, imported capital equipment must figure very prominently in total investment.[1] Once again, the opportunity need not be taken: for example, the increase in foreign exchange earnings may be used to finance the import of more consumption goods or the purchase of foreign assets: but it is at least presented.

In this respect it is clear that in the early post-war years at least both Argentina and Chile gained substantially from their terms of trade. From 1946 to 1948 Argentina's terms of trade improved by more than 50 per cent., largely through a rise in its export prices. Moreover, Argentina had the additional advantage of emerging from the war with ample reserves of foreign exchange, although for political reasons a substantial part of

[1] A conspicuous feature of post-war Latin-American development is the positive association between the terms of trade and the level of investment. Imported capital goods have been more than a third of the total value of investment. See U.N., *Economic Survey of Latin America*, 1955, p. 6.

these were used to expatriate foreign debt and to buy out the foreign owners of many public service industries.[1] Despite this, and despite the further fact that export volume declined during these years,[2] Argentina was able to double the volume of its imports. A considerable volume of investment was therefore made possible—the ratio of gross fixed capital formation to gross national product was probably around 25 per cent.—and as a result the development of the economy was able to proceed at a very rapid rate. It is estimated that between 1945 and 1948 gross product *per capita* rose by something like 6 per cent. per annum, and if the direct effect of improved terms of trade is taken in account the rise in income *per capita* works out at about 8 per cent. per annum.

Chile similarly benefited from a substantial rise in the dollar value of its exports (mainly copper) and in its capacity to import, particularly from 1947 to 1952. It seems, however, that a large proportion of the gains were in fact channelled into the government sector, rather than into investment in the private sector: certainly, the ratio of investment to national product did not approach the level in Argentina. Economic growth was correspondingly slower, real product *per capita* rising by about 10 or 11 per cent. in the course of five years.

Prices in both countries also rose during this period of economic expansion, which was not surprising in view of the stimulating effects of a rise in export prices and receipts.[3] Unless the government is taking firm steps to insulate the domestic economy from its external sector, one would expect a combination of multiplier and accelerator effects to stem from an expansion of export demand. These effects are no doubt an important part of the process through which the gains of the external sector are shared with the rest of the economy; but as a result the general situation is likely to be inflationary. The supply of goods is not likely to keep pace with rising incomes, particularly if the increased capacity to import is being used, partly or wholly, to raise the inflow of capital goods. Wages, too, will not remain stable in the face of rising export prices and profits, and a wage-price spiral can quickly ensue. But the fact that the terms of trade are improving does mean that real income will be rising to some extent, so that provided wages do not rise at a much faster rate than prices, some real capital formation can take place. Hence the government may view inflation with more equanimity than it might otherwise do. In Argentina real wages rose quite substantially (by 40 per cent.) in the period 1946 to 1948, despite considerable capital formation at the same time; but there

[1] U.N. *Economic Bulletin for Latin America*, vol. i, p. 27, 'The Situation in Argentina'.

[2] The purchasing power of exports, taking into account the change in the terms of trade, declined somewhat from 1946 to 1948. See ibid, table 3, p. 30.

[3] Prices rose by 30 per cent. in Argentina from 1946 to 1948, whilst in Chile they rose by 200 per cent. from 1947 to 1952.

were some losers in the inflation, for instance, government employees whose money incomes did not keep pace with prices. More important was the loss of the farm sector, a development which was to lead to considerable difficulties in later years. In Chile the potentially inflationary impact of rising export receipts made themselves felt largely through government expenditure. Taxes on the copper industry are the major source of fiscal revenue of the Chilean Government so that when they expanded under the influence of the export boom, the government was encouraged to increase its expenditure. In the event, the increase in the latter proved excessive, expenditure rising more than revenue which itself had trebled from 1947 to 1952. The massive increase in expenditure in Chile led to a rapid rise in imports which, despite the expansion of export receipts, also proved excessive. Pressure on the balance of payments led to continual exchange rate depreciation which naturally proved a potent stimulus to inflation[1] largely through the wage-price spiral. A peculiar feature of Chile's inflation and growth at this time, which was to prove significant later, was the failure of real wages to rise, despite the 10 or 11 per cent. rise in product *per capita*. Money wages barely kept pace with prices, so that the distribution of income must have shifted considerably in favour of the upper income groups. The fact that such a distributional change neither brought about a higher rate of capital formation nor checked the rate of inflation—prices rose by about 200 per cent. in five years—is a reflection of the high propensity to consume of the upper income groups in Chile. Indeed, the structure of production began to reflect the pattern of consumption demand associated with income inequality, a development which, as we shall show later, added to inflationary pressure as time went on.

Favourable effects on growth, associated with an improvement in the terms of trade, are more likely to be enjoyed if export prices and incomes are receiving the benefit of a long-run rise in demand, even though the cost may be a persistent rise in prices. They tend to be quickly dissipated if the rise in export prices is a purely temporary boom, to be followed by an equally precipitate slump. Not only is the rate of economic growth affected, but inflation may be accelerated: paradoxically, although rising export incomes set up upward multiplier effects on incomes and prices generally, a contraction in export incomes does not necessarily produce downward multiplier effects. There are three factors that can be mentioned in this connexion.

First, a worsening in the terms of trade immediately produces a check to the growth of real income, and, more often than not (since the export sector typically has large weight in an under-developed economy) an

[1] From 1947 to 1952 the dollar value of the peso declined by a half.

absolute fall in it as well. But a sudden fall in real income converts a rise in wages, incomes, and prices, which, when export prices were rising, served to distribute real income gains throughout the economy, into a vicious spiral in which all sections of the community are attempting to maintain individual real income standards that are no longer compatible with each other. When real income was rising, gains could be made by some sections without absolute loss to others: now, when export prices are falling and the terms of trade are worsening, gains by one sector (or even maintenance of its present absolute position) implies loss elsewhere. In these circumstances, the check to inflation is likely to be less, and the wage-price spiral becomes more vicious. In the second place a fall in export income, and hence of fiscal revenue derived from it, often precipitates a government budget deficit. It is not easy for governments to disengage themselves quickly from expenditure commitments undertaken in more favourable circumstances of rising exports, incomes, and taxes. Hence credit creation may put further pressure behind the wage-price spiral. Finally, a balance of payments crises may be precipitated, since, here again, it may be difficult to cut back imports quickly. If foreign exchange reserves have not been accumulated against this contingency, exchange rate depreciation may have to follow. Import prices now rise, whilst the fall in export prices and incomes (in domestic currency) is checked. In any case, the cost of living may be given a further fillip, increasing the difficulty of restraining the rise in incomes. Hence the rate of inflation often accelerates when export prices fall, whilst, at the same time, the rate of growth is checked.

Some or all of these factors certainly operated in Argentina and Chile in the post-war period. After 1948 Argentina's terms of trade began to worsen, an unfortunate development that—apart from a temporary boom at the time of the Korean War—was to continue throughout the post-war period. The volume of exports could not rise sufficiently to offset this adverse price effect, partly because of the needs of the population at home, partly because agriculture was suffering from the neglect of earlier years. Foreign exchange reserves were drawn on and use was made of international credit; but even so imports had to be contracted. The effect was to diminish the ability of Argentina to add to its capital equipment—and the investment coefficient which in the early post-war years was above 25 per cent. fell to 23 per cent. More important, however, was the limitation on the supply of fuel and industrial raw materials, which prevented the full exploitation of the productive capacity that had been built up in previous years.[1] The growth of the economy was consequently checked and indeed, both product *per capita* and income *per capita* began to fall. By 1957 they were both lower than they had been in 1948. But the halt

[1] See U.N., *Economic Bulletin for Latin America*, vol. i, No. 1, table 5, p. 33.

in development was not accompanied by a halt in inflation: on the contrary, the latter now accelerated. The wage-price spiral, which had been a feature of inflation of the earlier years, now, in contrast, operated in an environment in which real income *per capita* was falling: the terms of trade were worsening and productivity in the domestic economy was falling. In other words, the various bargaining groups of the economy were no longer operating in a situation where relative income gains could be made without *absolute* loss to others: instead, all groups were faced with absolute declines in their standards, and relative advantages could only be obtained at increased absolute cost to others. Hence the psychological pressure behind the wage-price spiral intensified. The government itself constituted an inportant body that was reluctant to reduce its absolute claims on the economy: indeed, public expenditure, formerly running at a little less than 20 per cent. of national product, now rose to more than 20 per cent. Public saving fell when public capital expenditure did not and the budget became increasingly unbalanced. The gap was financed by credit creation, as indeed were the needs of private enterprises in the face of an acute wage-price spiral. By 1952 prices had risen by more than 200 per cent. above their 1948 level.

Chile experienced an abrupt fall in copper export prices in the second half of 1953, and immediately pressures arose which more than doubled the rate of inflation in the course of the next three years. The most important of these pressures appeared on account of two important features of the Chilean economy, the first being the very heavy dependence of public finances on copper sales, the second being the system of exchange rates which operated to subsidize imports, particularly of consumption goods. There is not space here to go into operations of the exchange rate system in any detail,[1] but enough can be said to bring out the manner in which it contributed to inflationary pressure. The Chilean Government obtained part of its revenue from copper exports by levying a heavy direct tax[2] on the income of the copper firms, income being computed on the basis of the difference between the dollar price of copper in New York and the cost of delivering copper in that market. In addition, however, the government levied an 'implicit tax' on the production costs of the copper firms by virtue of the fact that it was able to sell pesos (in exchange for dollars) to the copper firms, to allow them to cover their costs in Chile, at a rate of exchange that was more favourable to the peso than was the rate at which they then sold the dollars so acquired to Chilean importers. In other words, they paid out less pesos to the copper companies in buying dollars

[1] For a more detailed discussion of the connexion between exchange rate policy and inflation, see U.N. *Economic Bulletin for Latin America*, 'Some Aspects of the Inflationary Process in Chile', vol. i, No. 1, Jan. 1956.

[2] 50 per cent. in 1953.

than they obtained from importers in selling the dollars; and the difference was regarded as government revenue. Moreover, since both rates of exchange were overvalued as against the free market rate, imports were in effect subsidized by the government—the government obtained less pesos from the sale of dollars (obtained from taxes on the copper companies) than it would have done if the free rate had applied. Between 1950 and 1953 the implicit subsidy amounted to an average about one-third of the import price, being greater in the case of consumption goods (about 40 per cent.) than for capital goods (25 per cent.).

But both subsidy and government revenue were obviously very precariously based. If copper sales fell off, the yield of the direct tax automatically fell off; and so did the yield of the 'implicit tax' on production costs, if the costs of the copper firms in Chile declined. Thus, if government expenditure was fixed, budget difficulties immediately arose. If sufficient foreign exchange reserves existed, imports could be maintained and so could government receipts via the sale of dollars from reserves. But if reserves were inadequate and the government had to get rid of its deficit, then importers had to be made to buy less dollars although pay more pesos for them. Rationing of dollars might solve the import problem but clearly not the budget problem. Hence a solution to both problems was provided only by devaluation of the exchange rate, i.e. raising the peso price of dollars to importers, which, however, had to have immediate repercussions on the peso price of imported goods.

Such was the process of inflation in Chile after 1953. A fall in copper sales reduced government revenue from copper by 26 per cent., total government receipts falling by 10 per cent. In consequence the official exchange rate to importers was devalued sharply, by 70 per cent., in order to reduce import subsidies; but even so, the budget deficit rose to 20 per cent. of total expenditure. Devaluation automatically raised import prices, consumer good prices naturally being affected the most since they had been subsidized most; and the cost of living rose by 70 per cent. Consequential adjustments to the salaries of public employees, and later to wages in private industry, now added further pressure. The production costs of the copper companies also began to rise, so that the Chilean Government had to provide the copper companies with more pesos although the companies could not or would not offer more dollars. Thus, this rate of exchange (the so-called 'returned value' rate) had to be altered, bringing it closer to the new official rate charged to importers; but this of course further reduced government revenue (the receipts of the 'implicit tax' on production costs once again fell off) so that once again the official rate to importers had to be raised. A further twist was therefore given to the inflationary spiral. At the same time government current and

capital expenditure continued to rise. The result was that a combination of growing budget deficits and repeated adjustments to the exchange rates brought about a self-sustaining rise in prices which in three years from 1952 to 1955, when it reached a climax, amounted to over 270 per cent.[1]

The growth of domestic product was also affected by the fall in copper sales. Gross domestic product had risen substantially in 1952 and 1953[2] but in the following year it fell considerably. Some recovery in 1955 still left it below the 1953 level. But stagnation from 1953 to 1955 was not due to a fall in the capacity to import: in fact the latter rose, partly as a consequence of falling dollar import prices. Private investment in fixed capital equipment was running at a very low level, no more than 5 per cent. of the gross national product, but this cannot have been due to lack of financial incentive or inability of the upper income groups to save. The distribution of income in Chile is very unequal[3] and taxes on industries other than copper are very low. It appears, however, that Chile presents a very clear example of the distorting effects of rapid inflation on the distribution of investment. Resources tended to flow into speculation in real estate and into the erection of luxury type residential building: in 1955 the latter absorbed more than 45 per cent. of fixed investment. This type of investment was of course of a very low productivity nature. To some extent this was no new phenomenon but had been characteristic of private investment throughout much of Chile's economic development; in 1954–5 it got worse. Public sector investment had played the major role in producing growth in the past, but in efforts to check inflation this was seriously cut back, particularly in 1956; and whilst inflation was thereby somewhat checked, a further decline in national product became apparent.

Neither Argentina nor Chile could allow their inflations to proceed at such great rates, and counter steps had to be taken. In Argentina, stabilization controls were applied to prices and wages in 1952 and the government imposed restrictions on credit creation by the banking system. Public expenditure was also contracted, falling from about 22 per cent.

[1] It could be argued at this point that the acceleration of inflation, with which we have been dealing, is not so much the consequence of fluctuations in export prices, as due to the failure of the government to take them into account in its investment policy: instead of taking out all the gains from improved terms of trade in the form of higher investment or consumption, governments should accumulate exchange reserves as well against the contingency of a later decline. Some Latin-American countries did in fact pursue such policies, thereby achieving more monetary stability: at the same time, however, they experienced very little growth.

[2] By 8 per cent. and 6 per cent. respectively.

[3] See U.N. *Economic Survey of Latin America, 1957*, table 183, p. 197. Workers and salaried employees, comprising over two-thirds of the population, received only 44 per cent. of national income.

of national product in 1951 to 19 per cent. in 1952, and to below 15 per cent. in 1953. Thanks to credit restriction there was no offsetting rise in private investment, and the overall rates of fixed capital formation to national product fell to its lowest post-war level (20 per cent.). These measures were strikingly successful in checking inflation: prices in 1953 were only about 4 per cent. above 1952, and rose only another 4 per cent. in 1954. But the effect on output was also severe: manufacturing output fell by some 6 per cent. from 1951 to 1952 and remained at this level in 1953. Industry was forced to work well below capacity—at the 50 per cent. level in some cases—and bankruptcies were widespread. Hence the government was not anxious to maintain its restrictive policy at such a cost; this, plus the fact of an opportune good harvest in 1953, led to some relaxation in 1954. Public expenditure rose again and credit restrictions were eased. But as we shall argue in a moment the fundamental imbalance in the economy remained, so that as output began to recover, prices began to rise as well. Whereas the rise in prices in each of the two previous years had been no more than 4 per cent., in 1955 they rose 12 or 13 per cent.

In Chile also the most effective check to inflation applied in 1956 was the regulation of wages and salaries in both the public and private sectors. These were adjusted so that they rose less than prices, thereby reducing the real income of the wage and salary earning sector. The distribution of income moved yet farther away from the lower income groups, and in consequence the demand for industrial consumer goods declined. There was also less pressure on industrial costs. As a result the rate of inflation in 1957 was only half that of 1956, and a third of that in 1955, but still reached the formidable rate of 30 per cent. The need to bring about a regressive shift in income distribution in order to check inflation, even then with only partial success, throws considerable light on the more fundamental causes of Chile's economic difficulties. It should be considered in conjunction with two facts: first, that the distribution of income in Chile was already very unequal before the 1956 stabilization measures were introduced; and second, that despite considerable income inequality the level of private investment in relation to national product was very low. In other words, it seems doubtful that the shift of income could be explained by expected effects on saving, since the propensity to save of the upper income groups was very low. Rather it must be explained by the imbalance between the pattern of consumption demand, which would result from a more equitable distribution of income, and the structure of production which had arisen over the war period and post-war development.

The steps taken by Argentina and Chile to contain their inflations could be successful, if at all, only as a short run stop-gap. They were certainly

not sufficient to reconcile long-run economic growth with price stability. The restrictive measures taken to reduce excessive monetary demand only partially removed the sources of inflationary pressures, whilst severely checking the rate of growth. Once they were relaxed, as in Argentina in 1954, prices began to rise again.

The real cause of the difficulty lay not so much in excessive demand, budget deficits, &c. (although of course these were important), but in the imbalance in production which had been allowed to develop in both countries in the earlier, more favourable years. In Argentina, during the years 1946 to 1948, it had been the deliberate policy of the government to prevent the farm sector from obtaining the benefit of high world prices of agricultural products. A combination of price controls over many basic agricultural products (e.g. cereals—wheat, maize, barley, oats) and overvaluation of the exchange rate served to depress agricultural prices relatively to industrial prices. This is shown by the fact that whereas from 1945 to 1948 the *external* terms of exchange between agricultural product exports and imported industrial goods moved in favour of the former by well over 50 per cent., the *internal* terms of exchange moved against agriculture: net industrial prices in the home market rose by something like 80 per cent., but agricultural prices were allowed to rise by only 65 per cent.[1] Industrialization was correspondingly promoted, particularly by the exchange rate policy which effectively subsidized imports of capital equipment and raw materials. Labour was encouraged to move from the land to industry, but since this was not 'surplus' labour, nor was it replaced by the introduction of new techniques or capital, agricultural output tended to fall. The effects of this were partially hidden up to 1948 by the fact that the needs of an expanding population at home were met by diverting exports; but when the terms of trade ceased to move in a way that could offset the fall in export volume, the imbalance in the economy became apparent. In Chile also a similar imbalance had grown up, largely induced, however, by growing inequality in income distribution, a point to which we shall return later.

We must now indicate how it is that excessive emphasis on industrialization, to the neglect of agriculture, tends to produce upward pressures on prices, quite apart from any general excess demand that might exist, so that if the latter is removed, prices may none the less continue to rise. We should not of course expect to find agriculture and industry growing at the same rates in the course of economic development. Even if agricultural raw material input remained a constant proportion of final industrial output, demand for agricultural output would tend to grow at a slower rate than demand for industrial output. The income elasticity of demand for

[1] See U.N. *Economic Survey of Latin America*, 1957, table 117.

food is, of course, the crucial factor, but even this does not remain constant through growth. When real income *per capita* is low, the income elasticity of demand for food will be high: it may be equal to or even greater than unity: but as the former rises, the latter will decline. Hence, if the income elasticity of demand is less than unity, demand for agricultural output will tend to grow at a slower rate than income and therefore at a slower rate than demand for non-agricultural output; and the difference will increase over time. But given the level of real income, there will exist an appropriate relationship between the growth of agriculture and the growth of industry which will leave the terms of exchange between them unchanged. If, however, the growth of industry is proceeding at a faster rate than is appropriate for the growth of agriculture, the terms of exchange will tend to move in favour of the latter; and whilst such a development may be compatible with stability of (or even a decline in) the general price level, there are reasons for believing that prices in general are more likely to rise. Moreover, this inflation occurs despite apparently successful efforts on the part of the government to keep *ex ante* saving and investment in balance.

First, look at the problem with the aid of a simple arithmetical model. Suppose we have an economy composed of two sectors only; the agricultural sector which produces food, and the manufacturing sector which produces both capital goods and manufactured consumer goods (we ignore agricultural input to the manufacturing sector). Capital goods are not bought by consumers and we assume that the demand for them does not depend on current real income. Food and manufactured consumer goods are, however, bought by consumers, and correspondingly, the demand for them does depend on real income. Let total output be initially divided up as follows: food 70 per cent., capital goods 10 per cent., and manufactured consumer goods 20 per cent. Now assume that, in a given period of time, output in the manufacturing sector increases by 20 per cent., whilst agricultural output remains constant.[1] What may happen to prices? There are a number of possibilities.

The rise in output in the manufacturing sector could take the form of capital goods only, the output of which then rises by 60 per cent. Since total output is rising, total real income also rises, so that if there is no equivalent rise in saving from the marginal increment of income, there will be excess demand for consumer goods, both food and manufactured, the prices of which will tend to rise. We have in fact normal excess demand inflation. Moreover, if marginal saving is zero (or low relatively to the in-

[1] The extra output in the manufacturing sector can arise either because of a rise in labour productivity in that sector or because labour has been able to move from the agricultural sector without affecting food output.

crease in income) and the income elasticity of demand for food is less than unity, manufactured consumer good prices will tend to rise relatively to food prices. For instance, if in our example the marginal ratio of saving to income is equal to the average ratio (i.e. 0·1) and if the income elasticity of demand for food is just below unity, say six-sevenths, then the percentage increase in the demand for manufactured consumer goods exceeds the percentage increase in the demand for food, so raising the prices of the former relatively to the latter. Alternatively, the rise in manufactured good output could take the form partly of capital goods, partly of manufactured consumer goods. Here again, if the rise in income does not lead to a rise in saving equivalent to the increase in investment, general excess demand appears. In this case, however, it is more likely that food prices will rise relatively to the prices of manufactured consumer goods—unless the income elasticity of demand for food is rather low—since now the supply of manufactured consumer goods, as well as the demand for them, is increasing. Thus, if in our example, the increment of manufactured good output is divided *equally* between capital goods and manufactured consumer goods, and if the marginal saving ratio is equal to 0·1 as before, then the income elasticity of demand for food would have to be below a half to cause the terms of exchange to move in favour of manufactured goods. The higher the income elasticity of demand for food and the larger the proportionate increase in the supply of manufactured consumer goods, the more likely it is that food prices will rise relatively to others.[1]

Another possibility is that when capital good output is increased the government is able to ensure that the amount of extra investment so being undertaken will be matched by an equal amount of saving from the increment of income. In other words, assume that *ex ante* investment and saving are made to balance. If in these circumstances the *whole* of the increment of output in the manufacturing sector takes the form of capital goods (i.e. we are assuming that both food and manufactured consumer good output remain constant) then no excess demand or supply would appear and prices would remain stable. But if part of the increment of output in the *manufacturing* sector takes the form of consumer goods (food output still remaining constant), a contrived balance between *ex ante* saving and investment would necessarily involve an excess supply of manufactured consumer goods. There would not be *general* excess supply, however, since there would exist simultaneously excess demand for food: on the other hand, neither would there be *general* excess demand. But it

[1] It is even possible that demand for manufactured consumer goods will increase less than supply, thereby exerting a *downward* pressure on their prices. We consider this possibility in a clearer context in what follows.

does not follow that the *general* price level would therefore remain stable. For reasons we shall now consider, it is much more likely that in these circumstances prices in general will rise.

The factor likely to produce a rise in the general price level in a situation in which excess demand for food exists side by side with an excess supply of manufactured goods, is the greater sensitivity of agricultural prices to demand. The upward pressure in the food market is likely to produce a rise in prices much more quickly than a downward pressure in the manufactured good market produces a fall in prices. In the short run, therefore, the general price level rises,[1] whilst a relative rise in the price of food switches demand away from food to manufactured goods.[2] Now a lot depends on what happens in the labour market. If money wages are sensitive to movements in prices then they may begin to rise with very little time lag. Further pressure is therefore put on food prices which continue to rise: moreover, costs of production in manufacturing industry may also be affected. What happens to manufactured good prices in the longer run depends partly on what is happening to productivity. If, for instance, the expansion of output in the manufacturing sector has been produced by a shift of labour from agriculture (rather than by a rise in the productivity of labour already employed), costs of production would tend to rise, which may now prevent any later fall in manufactured good prices, and may even cause them to rise. Thus the required improvement in agriculture's terms of exchange has to be brought about by a rise in food prices rather than by a fall in manufactured good prices, and general inflation ensues. Inflation would probably be somewhat less if the increase in output of the manufacturing sector stemmed from a rise in productivity there, since now there would be a greater chance of manufactured good prices falling if excess supply continued. But if money wages are responding very quickly to prices, particularly food prices, the beneficial effects of productivity growth on costs would be partly, perhaps wholly, offset, and manufactured good prices would not then fall. Once again the behaviour of food prices determines the change in the terms of exchange, in the context of a general rise in prices.

A major assumption of this example is that food output remains constant when manufactured good output increases; but we need not be so restrictive. The important thing is that food supply *per capita* does not increase at a rate appropriate to the increase in real income *per capita* and

[1] It is hardly likely that rigidity in the supply of money will prevent this, since the velocity of circulation is bound to be able to vary within limits. If interest rates then rise, it does not follow that investment or other demands will fall off either in the short run or in the long, particularly if the government is taking a leading role in capital formation.

[2] A low elasticity of substitution of food for manufactured consumer goods would imply a large relative rise in the price of food, making it more difficult to maintain general price stability.

the income elasticity of demand for food. There is then an upward pressure on food prices which may trigger off a wage-price spiral. If, on the other hand, the relationship between real income growth, food supply, and income elasticity is a more appropriate one, then, of course, there is greater chance of price stability. Indeed in such circumstances, an improvement in agriculture's terms of exchange could take place in an environment of falling prices: for instance, productivity may be rising so fast in manufacturing that in order for its output to be absorbed manufactured good prices must fall relatively to food prices. If there is little or no upward pressure on food prices owing to the satisfactory growth of food output, then the general price level will fall.

It is obvious that our explanation puts great stress on food prices, particularly as the prime mover in the wage-price spiral, but this does not seem unreasonable in a situation in which expenditure on food is still by far the largest item in total spending, i.e. the typical case as far as under-developed countries are concerned. Moreover, it is important to note that the type of inflationary pressure with which we are concerned does not stem simply from too high a rate of investment or from the *failure of the government sufficiently to restrict total consumption* (i.e. a failure to provide the necessary saving). Rather it is the result of unbalanced development which is forcing total consumption into a less desired pattern: the community is being forced to consume more industrial goods and less agricultural goods than its level of real income would normally lead it to do, *at unchanged relative prices*. In a free consumer market, therefore, food prices have to rise relatively to other prices, and if this necessarily involves an absolute rise in food prices then general inflation is the inevitable consequence. The government can, of course, try to prevent the inflation by controlling food prices, forcing the farm sector to sell its output at prices below those that would rule in a free market: alternatively, it could subsidize food prices to urban industrial workers, to prevent the spread of cost inflation there. But such remedies require a system of rationing and a firm control over black-market activities, both of which require considerable administrative machinery and expertize which tend to be lacking in under-developed countries; and the former remedy, by giving the farmer no incentive to increase his output, runs the risk of perpetuating the fundamental inflationary force. Even if prices are restrained for a while, there comes a point when the farm sector must be induced to expand its output, and in a free economy this can hardly be done without allowing food prices to rise. Hence in the end the government has to permit some rise in prices to solve its basic problem.

It is suggested that this analysis, artificial though it is, throws some light on the causes of inflation in Argentina and Chile (and in other Latin-

American countries as well),[1] particularly in the later post-war years, when fluctuations in the terms of trade were not so important. We indicated earlier that agricultural output in Argentina had declined from 1945 to 1948 when industrial output was rapidly rising. The imbalance in development is indeed well brought out by statistics relating the growth of food *supply per capita* to the growth of real income *per capita*: from the late 1930's to the early 1950's, disposable gross income *per capita* rose by about 21 per cent. whereas available food supply *per capita declined* by 7 per cent.[2] It seems hardly likely that the population would have been content to reduce its food consumption *per capita* when its real income *per capita* was rising substantially, unless it was forced to by controls or by a substantial relative rise in food prices; and for reasons we have earlier set out, it is hardly likely that the required relative price change could be brought about without strong upward pressure on the general price level, quite apart from monetary and fiscal policies currently being pursued.

The Argentinian Government somewhat belatedly recognized the structural deficiencies which had arisen and began to take steps in 1952–3, and again in 1955, to correct them. For instance, exchange rates were devalued and standardized, and minimum guaranteed prices were raised, in order to raise agricultural incomes and stimulate output; and a development fund was set up to promote technological progress in agriculture. The essential aim of these measures was to shift the distribution of income and investment in favour of agriculture; and it is clear that the measures succeeded in improving the terms of exchange of agricultural goods against industrial goods. Between 1955 and 1956 agricultural prices rose 20 per cent. more than industrial prices, and agricultural output rose substantially. Unfortunately (but, for reasons we have given, inevitably), the improvement in the exchange position of agriculture was accompanied by intensification of inflation. Given the need to raise agricultural prices relatively to industrial prices, and given the fact that the latter could hardly be forced down without severe dislocation of industry, the general price level had to rise. The government, at the time of introduction of its new policies, had estimated that devaluation would raise the cost of living by 10 per cent. In fact, however, it could not prevent money wages from rising in sympathy with food prices—which was, of course, necessary if the internal monetary situation was to be kept under control. As a result, the wage-price spiral once again got under way. By December 1956 retail prices were 17 per cent. above the level at the end of 1955, and the rise accelerated in 1957.

[1] A failure of agriculture to develop with industry seems to be a conspicuous feature of the development of many of the Latin-American countries. See U.N., *The Selective Expansion of Latin American Agriculture*.

[2] Ibid., chap. ix.

In Chile the decline in the agricultural position was less marked: certainly the relation between real income growth and food supply, as compared with pre-war years, was more satisfactory than in the case of Argentina. For instance, whereas disposable income *per capita* rose by about 22 per cent. from the late 1930's to the late 1940's food supply *per capita* increased by 13 per cent. But most of the gains in food supply seemed to have been made in the war years. After the war, food supply *per capita* in fact rose very little, although other production continued to rise. Moreover, production became unbalanced in other directions as well, reflecting a growing income inequality in Chile. For instance, three quarters of the increase in national product that took place from 1950 to 1955 took the form of services; and the share of services in national product rose from 43 per cent. in 1940 to 57 per cent. in 1955. Real wages of industrial workers rose very little in the post-war period, so that the pattern of production was reflecting the favourable position of the upper income groups. But obviously there must be a lower limit to the level of real consumption of the poorer sections; and when as in 1953 external factors tended to bring about a fall in total real income, steps had to be taken to prevent a fall in the *absolute* standards of these lower income groups. Thus, when prices rose in 1953 and 1954, as a result of devaluation, it was necessary to adjust the compensation of workers and employees proportionately. But, of course, the attempt to maintain the real income of the employee sector, *at a time when total real income was falling*, necessarily involved a shift of income distribution towards it. In fact, this was not possible without a substantial change in the structure of production to bring it more in line with the pattern of demand arising out of a more equal distribution of income. In particular, a substantial relative rise in food production was required which clearly was not possible in any short period of time. It is not surprising, therefore, that prices of food and other essentials began to shoot upwards. But inflation did not help to bring about the desired pattern of production, quite the contrary, since investment was increasingly directed into speculative activities. Even when, as in 1956, the attempt to maintain the real income of the lower income groups was abandoned, the reduction in their incomes did not bring about a proportionate reduction in the demand for food, although the demand for some industrial products was reduced. Hence, food prices continued to rise rapidly in 1956 and 1957, even though the total rate of inflation was reduced.

In sum, therefore, it seems fair to argue that the post-war inflationary experience of Argentina and Chile demonstrates in a very clear fashion the danger of too rapid industrialization relative to agricultural growth. It is certainly true—the point was emphasized at the beginning of this

article—that the task of promoting growth in these countries with reasonable price stability was complicated greatly by severe fluctuations in export prices and in the terms of trade, which, apart from anything else, made the pursuance of stable monetary and fiscal policies highly difficult. There is also not much doubt that even without this difficulty, government control over spending and the money supply would have proved too lax for price stability. But the substantial point remains: even if there had been no fluctuations in the terms of trade, even if government monetary and fiscal policy had been a model of rectitude, none the less, there would have been pressure on prices arising from a too rapid rate of development of industry as against agriculture. The inflationary consequences of this development were at first hidden by the greater inflationary pressures associated with fluctuations in export prices and the terms of trade; but they became apparent as soon as serious efforts were made to stop inflation. They showed themselves partly in the fact that anti-inflationary policies severely checked the rate of growth at the same time that they reduced the rate at which prices were rising: moreover, when the restrictive measures were later relaxed, in order to restore growth, inflation simply started again. More important, however, is the fact that when steps were eventually taken to promote a better balance between agriculture and industry, prices had to be allowed to rise in order to get the required redistribution of resources and investment.

We have paid particular attention to events in Argentina and Chile, but the arguments have a wider relevance, particularly for the Latin-American region as a whole. A United Nations investigation into Latin-American agriculture has demonstrated very clearly how agricultural production has failed to keep pace with population and other production since pre-war years.[1] In 1954–5, for example, the *per capita* production of foodstuffs in the region as a whole was about 6 per cent. *lower* than pre-war. Non-foodstuff production had fared even worse, being on a *per capita* basis about 26 per cent. lower. Admittedly, the fall in total foodstuff production was largely the result of a fall in production of three products—coffee, meat, and wheat—and the performance of the region as a whole is dragged down by the poor agricultural record of two countries, Argentina and Brazil, the main producers of these products. Moreover, the fall in production has tended to affect exports rather than the availability of supplies to domestic consumers;[2] and Latin America as a whole (particularly Brazil, Colombia, Mexico, Venezuela) have become increasingly dependent on imported foodstuffs. None the less, the combined effect of the relative

[1] U.N. *Selective Expansion of Agricultural Production in Latin America*, chap. III.

[2] A feature of post-war development in Latin America, commented on in various Economic Surveys of the area, is the increased concentration on production for domestic use. See, for instance, *Economic Surveys of Latin America*, 1953, 1956, and 1957.

decline in exports and increase in imports was not great enough to offset the failure of production to rise with population and real income. It is estimated that whereas real income *per capita* in the area as a whole had risen by about 45 per cent. from the 1930's to the 1950's, food *supply per capita* had risen by only 8 per cent. If an estimate of 0·6 is accepted for the income elasticity of demand for food,[1] then it seems evident that available food supplies (i.e. taking into account imports and exports) did not rise sufficiently to match the rise in demand which, *at unchanged relative prices of food and other goods*, would have been brought about by the rise in real income. In fact, a large change in relative prices was required to produce balance between the demand and supply of food, and this could not easily be achieved without a rise in food prices. Hence it is not surprising that food prices led the way in the great inflations experienced by Latin-American countries. Agricultural production, relative to population and income growth, fared worse in some countries than in others, and it might be asked whether the rate of inflation was highest in those countries in which agriculture lagged most. A perfect correlation of course does not exist since other factors were at work, but it is significant that post-war agricultural performance in Argentina, Chile, Paraguay, Bolivia, and to a lesser extent Brazil, has been particularly poor, whilst inflation has been very great. On the other hand, food supplies *per capita* developed more favourably in Mexico, Colombia,[2] and Cuba, where inflation was generally less. Hence we can reasonably conclude that agricultural development was a vital factor in the situation.

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[1] Given, for instance, in the U.N. publication, *The Selective Expansion of Agricultural Production in Latin America*, p. 21.

[2] In the case of Colombia food imports were very important.

# BALANCED GROWTH AND INTERNATIONAL SPECIALIZATION: A DIAGRAMMATIC ANALYSIS[1]

*By* JOHN MICHAEL MONTIAS

IMPORTANT new ideas with strong intuitive appeal are not always rigorously put when they are first formulated. The best indication that the concept of balanced growth is in need of refinement is that few economists agree on its content and meaning. Rather than try and deal exhaustively with the diverse ideas that have been linked with the doctrine, I have singled out one of its interpretations for systematic analysis. Nurkse's original formulation of the problem will be the starting point for this theoretical excursion:

> The difficulty caused by the small size of the market relates to individual investment alternatives in any single line of production taken by itself. At least in principle, the difficulty vanishes in the case of a more or less synchronized application of capital to a wide range of industries. . . . Most industries catering for mass consumption are complementary in the sense that they provide a market for and thus support each other. . . . The case for 'balanced growth' rests on the need for a 'balanced diet'.[2]

We shall first examine the case for balanced growth in a three-commodity economy: shoes and clothing are complementary goods in consumption; food is the staple article in the community's budget.[3] At this first stage in the analysis, which will be confined to comparative statics, the movement through time from one production surface to the next will be viewed as the consequence of the increased availability of resources, including mainly capital, of unspecified provenience.[4] We shall initially pretend that our hypothetical underdeveloped country is cut off from all opportunities of foreign trade. International trade will be introduced subsequently, first under conditions of perfectly elastic reciprocal demand, later with finite elasticities. In section IV, after the assumption of fixed factor supplies has been relaxed, we shall study the economy's expansion path from one point of equilibrium to the next.

In recent years powerful objections have been raised against Nurkse's

[1] I am grateful to Egon Sohmen for numerous suggestions and criticisms at various stages in the preparation of this paper and to Stephen Enke, Franz Gehrels, and Albert Hirschman for their helpful comments on an earlier draft.

[2] R. Nurkse, *Problems of Capital Formation in Underdeveloped Countries*, Oxford (5th ed.), 1957, p. 11.

[3] For the purpose of this model, shoes and clothing may be said to be complementary as long as the ratio of the marginal utility of shoes (resp. clothing) to the marginal utility of food increases as clothing (resp. shoes) is substituted for food on a constant indifference surface.

[4] 'My own assumption . . . was that of a given labor force being equipped with an increased stock of capital' (Nurkse, 'Balanced Growth under Static Assumptions', *Economic Journal*, lxvi. 363).

doctrine. Some critics have gone so far as to build up a case for *unbalanced* growth.[1] Their arguments will be considered in the framework of the general model developed in this paper; I shall try to show how different assumptions relating to the presence or absence of economies of scale, the complementarity of production factors and their elasticities of supply, the international terms of trade, and the behaviour of investors under high-risk conditions may swing the balance toward one or the other of the development policies advocated.

## I. Balanced Growth. The Case of Increasing Costs

Fig. 1 represents a transformation surface and two community indifference surfaces for the food crop $A$ and manufactures $B$ (shoes) and $C$ (clothing).[2] The transformation surface $PLRO$ and the indifference surface marked $I_1$ belong to the initial time period (time 1). The surface marked $I_2$ belongs to a later period (time 2): it is supposed to show a higher level of satisfaction than $I_1$ at all points. For the time being, we assume that shoes and clothing as well as food are produced under increasing-costs conditions.[3] (Their transformation curves, for any level of output of $A$, are concave to the origin.)

In Fig. 1, a few food-clothing and food-shoes indifference curves have been drawn for fixed amounts of shoes and clothing respectively. The border lines $PG$ of surface $I$ and $SW$ of surface $II$ are food-clothing indifference curves corresponding to a null consumption of shoes. The indifference curves drawn from points $T$ and $U$ correspond to a small fixed consumption of shoes. (The line traced by each of these curves is in a plane perpendicular to plane $AOB$ and parallel to $AOC$.) The curves drawn from points $P$, $T$, and $D$ on surface $I$ are only slightly inclined toward the 'floor' (plane $BOC$); this is because, at the initial stage of development, where the economy is still near the subsistence level, consumers can afford to give up very little food in exchange for even large quantities of clothing. Since this is also true for the food-shoes lines, the entire surface barely dips toward plane $BOC$. But at the higher level of satisfaction of $I_2$, the indifference curves are much more steeply sloped, for the marginal utility of food relative to clothing and shoes is then much smaller than it was at $I_1$. This is shown for food and clothing by the curves originating at $U$ and $V$ and for food and shoes by the curves originating

[1] See in particular, Albert O. Hirschman, *The Strategy of Economic Development*, Yale University Press, 1958, and Paul P. Streeten, 'Unbalanced Growth', *Oxford Economic Papers*, June 1959, vol. ii, No. 2, pp. 166–90.

[2] In section IV, I consider the possibility of shifts in the indifference surfaces as a result of changes in income distribution.

[3] In this model no allowance has been made for external economies in production. These economies are discussed in Marcus Fleming's 'External Economies and the Doctrine of Balanced Growth', *Economic Journal*, lxv, June 1955.

at $M$ and $N$. The entire surface now sags more deeply in the middle, but the bottom of the surface gradually flattens out as both clothing and shoes are substituted for food. The properties of the indifference surfaces discussed so far have been deduced from the limited substitutability of food

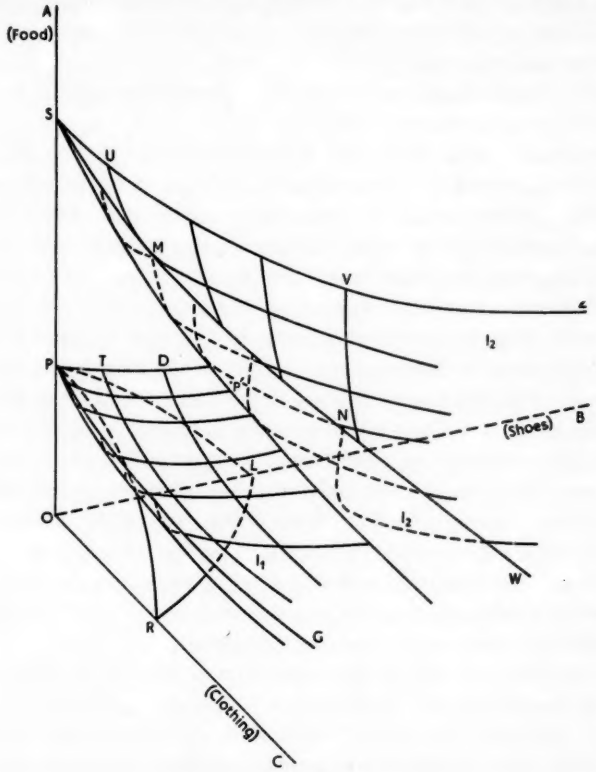


FIG. 1.

and manufactures and from the low income elasticity of food consumption. The complementarity relation between shoes and clothing adds another constraint. Curves drawn from points of increasing shoes consumption along $SZ$, such as $U$ and $V$, must fall at an increasingly steep slope (relative to plane $AOB$). This illustrates the proposition that the marginal utility of food relative to clothing must decline as the consumption of shoes increases. Also by reason of the complementarity of shoes and clothing, food-shoes curves drawn from points of increasing clothing consumption such as $M$ and $N$ along $SW$ must fall more and more steeply.

The transformation surface traces out the locus of all efficiently produced combinations of outputs $A$, $B$, and $C$ during a period of time long enough

to permit the movement of 'variable factors' between sectors but too short for the total supply of any factor to show any significant accretion. The slope of any transformation curve, obtained by holding constant the production of one of the three commodities, expresses the ratio of the marginal costs of the two remaining commodities whose production possibilities are traced out by the curve; this ratio is taken to reflect both money costs and opportunity costs.

In this Nurksian model, an adequacy of effective demand in the macro-economic sense is postulated throughout.[1]

The Pareto optimum at $P$ or in its neighbourhood is such that mainly food would be produced and consumed; little or no manufactures would be available to consumers in this isolated economy. Suppose now that at time $t_1$, this economy were given the opportunity to trade with the rest of the world at prices that were unaffected by the volume of its imports or exports. Its trading opportunities could be represented in the diagram by a plane with direction coefficients equal to the international-trade price ratios. If this plane happened to be tangent to the transformation surface only at point $P$ on the food axis, then either there would be no trade at all (if the price plane could be wedged between indifference surface $I_1$ and the transformation surface), or food would be exported in exchange for one or both manufactures (if international prices of shoes and clothing were extremely low in terms of food). On the other hand, if the price plane were tangent at some other point of the transformation surface but $P$, clothing or shoes would be produced and exported in exchange for food. In this latter case, diversification rather than specialization would be the consequence of trade at an early stage of development.

An opportunity is now at hand to expand the entire transformation surface by means of the newly available supply of capital and of any other resources, including the natural increase in the labour force, which may have accrued between time 1 and time 2. The new transformation surface (which has not been drawn) will touch a higher indifference surface $I_2$ at point $P'$.[2] Given our assumptions, $P'$ would be a point of market equilibrium in the absence of trade. Under conditions appropriate to Nurkse's model, $P'$ will lie in the part of the space where all three goods will be produced. One essential condition for this is that the expansion of the

[1] '. . . The deficiency of market demand . . . is a deficiency of real purchasing power, in terms of classical economics. It is not a deficiency of "effective demand" in terms of Keynesian economics.' Nurkse, *Problems of Capital Formation . . .*, p. 17.

[2] There will be two transformation surfaces—each with its particular time dimension—both tangent to $I_2$ at $P'$: the first, a surface showing all production possibilities at time 2 as they may be envisaged at time 1, starting from point $P$, on the assumption that the new resources will be invested efficiently; the second, the locus of short-run production possibilities after investments with a certain gestation period have already been made, would show the possible outputs of the three goods that can be achieved by changing the allocation of variable factors.

transformation surface (corresponding to all possible efficient allocations) must not be so lopsided as to offset the demand factors pulling in the direction of diversified outputs. The chances that both manufactures will be produced will be improved if shoes and clothing happen to use up inputs in very different proportions (this will make the production surface bulge out more markedly). The demand factors just referred to are bound up with our assumptions about the indifference surfaces: The high income elasticity of manufactures must cause each indifference surface to sag toward plane *BOC* more deeply than the last and the 'walls' of each surface must become increasingly steep as more shoes and clothing (complementary in consumption) are substituted for food. Thus, points of complete or near-complete specialization are more likely to be optimal when the potential output of manufactures is still small. But as this potential expands, the production of one of the manufactures so increases the demand for the other as to render its production worthwhile.[1]

Nurkse's contribution was not limited to locating a Pareto optimum under these conditions. He also questioned whether market pressures would normally guide the economy toward this optimum.[2]

As industrial investments usually take some time to mature, these pressures must be felt at time 1, before the projects have been launched. How does the future strength of demand for manufactures associated with a higher level of labour productivity at time 2 and favourable income elasticities translate itself into attractive prospects at time 1? In terms of the above model, we may also ask how investors should be able to anticipate the special opportunities that complementarities in demand between shoes and clothing will eventually create. (Investors may spend all their resources on an increase in the capacity of output of either *B* or *C* alone, and the resulting market equilibrium will correspond to a lower indifference level than $I_2$.)

Forecasting errors of this type are more likely to occur:

1. The greater the relative expansion of the transformation surface made possible by the new resources (especially in the direction of complementary manufactures).
2. The longer the gestation period of investments.
3. If neither of the manufactures *B* and *C* is produced at the initial point *P*, or if some *B* and *C* are initially produced, but the strong

[1] This can be seen in Fig. 1. At point *U*, where only shoes and food are consumed, the demand for clothing, gauged by the slope of the food-clothing indifference curve originating at *U*, is not so great that a production surface strongly biased toward the production of food and shoes might not be tangent to this point. But for point *V* to be optimal, assuming an expansion of the production surface in that direction, the ratio of the marginal costs of food and clothing would have to drop to nearly zero (so as to equal the near-zero ratio of their marginal utilities, as illustrated by the almost vertical drop of the curve from *V*).

[2] Nurkse, *Problem of Capital Formation* . . ., pp. 13–14.

demand for food close to the subsistance level depresses the relative prices of manufactures and obscures the real potentialities of their expansion at higher levels of income.

4. The smaller the impact of international trade on the economy. (If world prices exert a determining influence over domestic markets, changes in domestic supply relations will affect the volume of the country's imports and exports rather than the price structure.)

These errors might require the 'planners' guiding the growth of the economy in a free-enterprise system to inform investors of the superior prospects that balanced investments might give rise to.[1]

## II. Balanced Growth. The Case of Increasing Returns in Manufactures

One version of the balanced-growth doctrine holds that investments should be made both in shoes and clothing capacity rather than be concentrated in a single line of production, even though each commodity could be produced under strongly increasing returns. We shall suppose that, at time 2, the transformation curves between $B$ and $C$ for any level of output of $A$ are convex to the origin. In effect we are saying that only a very small number of shoes plants or clothing plants can be constructed; if the new resources are parcelled out between two enterprises, neither will be able to achieve the lowest average-cost capacity.[2] This seems like a fairly typical situation for a small underdeveloped country.

Fig. 2 illustrates the situation. The new transformation surface has expanded from the old surface shown in Fig. 1 mainly in the direction of planes $AOC$ and $AOB$.[3] Increasing costs still prevail in the transformation curves relating $A$ and $C$ on the one hand and $A$ and $B$ on the other. The reader should keep in mind throughout the following discussion that the surface bordered by the lines joining the points $M$, $L$, and $N$ is hollowed out ('re-entrant').

To visualize Fig. 2 it may be helpful to think of the sagging indifference

[1] Theoretically, the failure of the market to communicate future prices to entrepreneurs might be laid to the absence of futures markets for manufactures and food. But if these markets are atrophied in developed countries, it is unrealistic to expect that they should be well enough established in backward economies to bridge the gap between present and future scarcities.

[2] Cf. Jerome Rothenberg, 'Non-convexity, Aggregation, and Pareto Optimality', *The Journal of Political Economy*, lxviii, Oct. 1960, pp. 460–8.

[3] This new surface must be of the first type defined in note 2, p. 206. For shoes and clothing each to be produced under economies of scale, capital investments have to be undertaken. It is not possible for the economy to move from ridge $LM$ to ridge $LN$ in less time than is necessary to build new capacity for the production of the hitherto non-produced commodity. Short-run production possibilities might be indicated by drawing a number of concave-to-the-origin surfaces (corresponding to different investment policies), each adhering at one point to the bottom side of the transformation surface actually represented.

surface $I_2$ as resting at point $Q$ on a hollowed out transformation surface sloping off towards the 'floor' (plane $COB$). At $Q$ all three commodities are produced, as in the case where increasing costs prevailed throughout. If manufacturers restrict output, as less-than-infinitely elastic demand

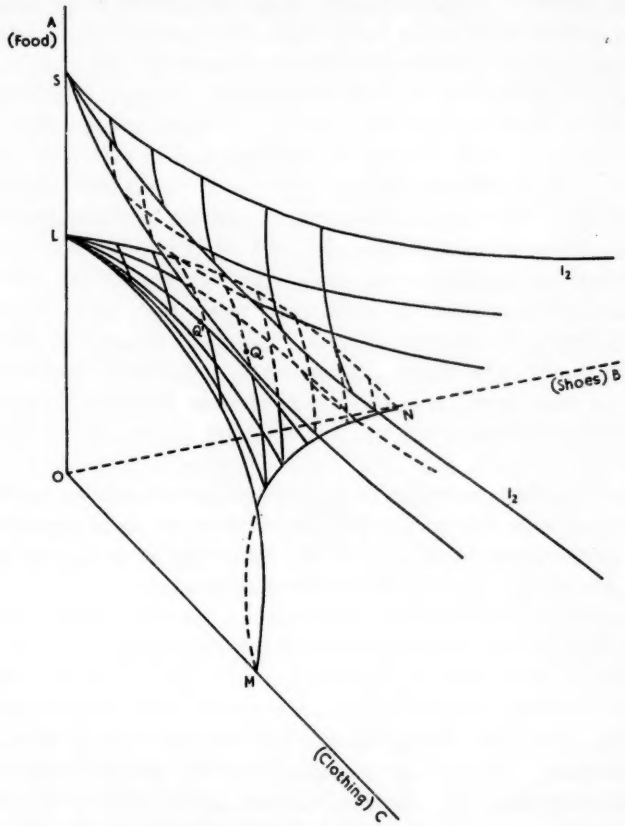


FIG. 2.

conditions should enable them to, the point of equilibrium will be displaced from $Q$ in the direction of competitive agriculture, toward a point such as $Q'$ in Fig. 2, which would touch an indifference surface inferior to $I_2$. ($Q'$ would also lie closer than $Q$ to ridge $LN$ if the degree of monopoly power was higher in the manufacture of shoes than in the manufacture of clothing.) In any case, $Q'$ would still lie in the hollowed out segment of the surface.

Let us now introduce the possibility of foreign trade at constant-price ratios. Equilibrium must now move to a point on ridge $LM$ (production

limited to food and clothing) or to a point on ridge *LN* (food and shoes), no matter what international prices the country is confronted with. For no plane corresponding to any conceivable international price ratios can be wedged between the hollowed out transformation surface and the sagging indifference surface. Every plane must cut a ridge or the indifference surface or most probably both. If a plane with direction coefficients equal to the international price ratios cuts the ridge *LM* but rises above *LN* then there will be strong inducements to entrepreneurs to concentrate on the output of clothing and import shoes (and possibly food).[1] To determine how much clothing will be exported in exchange for shoes and/or food, we must first raise the plane to tangency with the highest point on ridge *LM* and locate the point of contact of the plane with the highest indifference surface attainable. In all likelihood, some clothing will be consumed at home, since the sagging surfaces of the superposed indifference surfaces must be increasingly steep (by reason of the high income-elasticity of manufactures) and any plane tangent to one of the ridges will therefore be tangent to one of the indifference surfaces before it hits the *A* axis. In any case, the long-run trend will be toward specialization in one or the other of the two manufactures as a result of the opening of trade.

Suppose now that the foreign demand for manufactures were imperfectly elastic. Then, since international prices could no longer be represented as the direction coefficients of a plane, the possibility of producing all three goods in equilibrium again comes under consideration.

It is convenient to study this more complicated case in two dimensions, one axis representing shoes (*B*) and the other clothing (*C*), as in Fig. 3. The transformation curve reproduced in this diagram, which is smoothly convex to the origin, illustrates the case where each industry is represented by one firm only. By sliding the foreign-offer curve along the domestic transformation curve, I have traced a 'Baldwin envelope' showing the maximum quantities of *B* and *C* that can be made available for consumption, whether the country concerned levied 'optimum tariffs' or domestic firms exerted their monopoly power.[2]

Under either policy, no point preferable to *L* could be attained; at this

[1] In the short run, production in the neighbourhood of *Q'* may be stable, since the short-run transformation surface will lie *below Q'*. But there will be a manifest advantage to building up clothing capacity and to exchanging a part of the product of this new capacity for shoes.

[2] We cannot foresee what would happen under 'free trade', for the assumption of competitive behaviour underlying a free-trade analysis runs up against the market imperfections inherent in the decreasing-cost situation. For details on the construction of the envelope, see the two articles by Robert F. Baldwin, 'Equilibrium in International Trade: A Diagrammatic Representation', *Quarterly Journal of Economics*, Nov. 1948, and 'The New Welfare Economics and Gains in International Trade', *Quarterly Journal of Economics*, Feb. 1952.

optimum, price $p_t$ would prevail, and $MN$ of $C$ would be traded for $NL$ of $B$.[1]

For diversification to be profitable under these conditions, there must be an indifference curve higher than $i_2$ that is tangent to the Baldwin envelope to the right of the point (marked $R$ in the diagram) where the

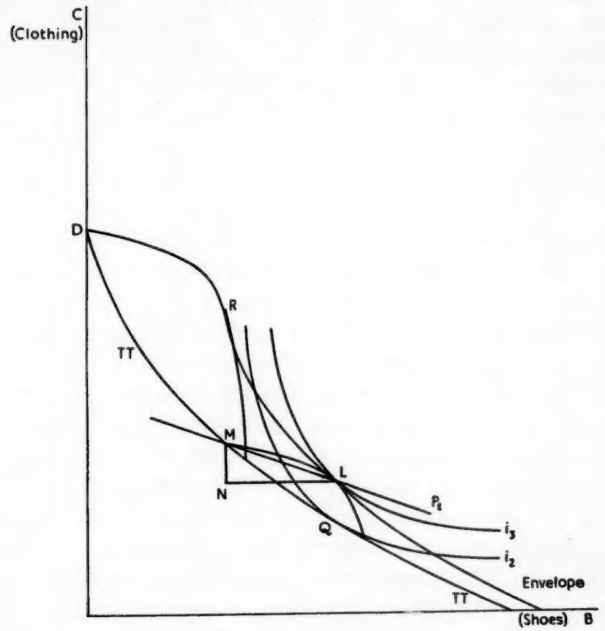


FIG. 3.

foreign offer curve starting from $D$ has the same slope as the transformation curve at $D$.[2] The likelihood of diversification being Pareto-optimal will tend to increase as the transformation curve approaches a straight line or begins to bulge outwards.[3] This may occur in the process of develop-

[1] We must again assume that enough time has elapsed to permit capacity expansion in the direction of the commodity with a comparative advantage.

[2] The slope of the Baldwin envelope at any point $P$ equals the slope of the transformation curve at the point of origin of the foreign offer curve that is tangent to the envelope at $P$. But, up to point $R$, the envelope coincides with the foreign offer curve drawn from the point of complete specialization $D$. At $R$ the foreign offer curve has the same slope as the transformation curve at $D$. Points below $R$ (such as $L$), which correspond to foreign offer curves originating below $D$, will be points of incomplete specialization.

[3] The analysis in terms of finite elasticities can be applied to the case of a transformation surface that is concave to the origin, such as we considered in Fig. 1. The conclusions of this analysis are as follows: (1) there will be one point in each transformation curve for products $B$ and $C$ where the Baldwin envelope touches the edge of the curve. If it so happens that an indifference curve is tangent to the envelope at this very point, both products will be produced and there will be no trade. This is most unlikely. (2) There may also be no trade

ment because of the establishment of new firms in the market, some of which should find it profitable to concentrate on the hitherto neglected product.[1]

## III. Variable Factor Supplies and Specialization

So far we have assumed that the economy was endowed with a given aggregate supply of every factor. How would changes in factor supplies caused by a rise or fall in the demand for these factors affect the transformation surfaces of our three-commodity model and in what direction would the new equilibrium tend to move? The elastic response of aggregate factor supplies to monetary incentives would always mitigate the effect of decreasing returns: it would cause the curves to become less concave to the origin if increasing costs prevailed to start with or more convex to the origin in the case of decreasing costs.[2] A look at Fig. 2 will reveal that if the transformation curves relating shoes and clothing should become more convex to the origin the chances for specialization would be enhanced. For a given degree of complementarity in the demand for the two goods, increased convexity might well give rise to two alternative equilibria: one close to specialization in shoes, the other in clothing. On the other hand, the opportunities for the conversion of agricultural into industrial labour would help to iron out the concavity in the curves relating food and clothing and food and shoes. This would tend, *ceteris paribus*, to make the entire surface bordered by points $M$, $L$, and $N$ in the diagram less hollowed out. This change would raise the probability that both shoes and clothing would be produced in the absence of international trade. If trade were possible and the country were faced with offer curves of a finite (given) elasticity, the chances that the equilibrium production point would fall on the shoes or on the clothing axis would be less than if the total supply of each factor had remained constant.

Since in underdeveloped countries the reservoir of underemployed farm labour that can be converted into non-agricultural manpower (given high enough real wages in these occupations) is likely to be at least as large as the entire industrial working force, the net effect of allowing for variable

if the elasticity of the foreign offer curve is smaller than that of each of the transformation curves at every point. (3) There will be complete specialization under free trade if the home offer curve crosses the foreign offer curve drawn from one of the extremities of the transformation curve above the latter and if the point of intersection between the two offer curves lies on a higher indifference curve than that which could be reached in the absence of trade.

[1] The entry of new firms will have the effect of making curve $TT$ in Fig. 3 scallop-shaped (see Rothenberg, op. cit., p. 461). The envelope, instead of caving in from $R$ down, will bulge out at points corresponding to diversified outputs.

[2] Cf. Jaroslav Vanek, 'An Afterthought on the Real Cost-Opportunity Cost Dispute and Some Aspects of General Equilibrium under Conditions of Variable Factor Supplies', *The Review of Economic Studies*, xxxvi, June 1959.

factor supplies would tend to make for industrial diversification rather than for specialization.[1]

## IV. The Growth Path

We have now examined a variety of factor bearing on the optimal degree of specialization at a point in time. The doctrine of balanced growth tells us that the best path the economy might take in moving from one Pareto equilibrium to the next would cross the production surfaces at points where all three goods were produced (and relative outputs were at least roughly proportional to the income elasticities of the different goods). We have seen that in the absence of international trade the high income elasticity of complementary goods such as shoes and clothing would pull in the direction of such a balanced path.

Assuming now that balance was Pareto-optimal at every point in time, might there be compelling reasons to abandon this path? To justify such a deviation, a faster rate of growth would have to be generated. Not only would consumers have to be better off at some terminal point than if the economy had followed the Pareto path, but the greater degree of welfare would have to be sufficient to compensate households for their temporary losses. If Pareto optimality corresponded to an acceptable income distribution during every period, the alternative pattern of development would also have to be satisfactory from this point of view. This social criterion is apt to be violated in schemes which aim at stepping up growth by redistributing incomes in favour of entrepreneurs and investors. By subsidizing capital-intensive goods and taxing land- or labour-intensive goods, the state can, within certain limits, improve the profits of the owners of capital and thereby at least make possible a higher level of investment. If the increased production of the capital-intensive goods does not absorb all the extra investment and if the supply of the adversely affected factors is not unduly curtailed, this policy may actually stimulate growth—at the expense of equity.[2]

[1] If the fixed costs incurred by farm labourers in moving from the country to the city were high (relative to the difference in living expenses representing the variable costs of this movement), an increase in urban real wages, above a certain point, might provoke a sudden jump in rural-urban migration. The food-shoes and food-clothing transformation curves might then be discontinuous in certain ranges and eventually become convex to the origin as food output declined relative to manufactures.

[2] If the demand for capital-intensive goods on the part of capitalists is highly income-elastic, while it is relatively inelastic for other classes (e.g. if these goods are inferior in their budget), a random disturbance in a competitive economy away from the original Pareto equilibrium which caused the production of capital-intensive goods to become more profitable might provoke a new (locally stable) equilibrium where more of these goods would be produced and less of the labour-intensive ones. This would be due of course to the shift in incomes in favour of capitalists and to the consequent change in the pattern of consumers' demand. The new equilibrium, however, might not meet the ethical test of society. This situation can be analysed with the aid of a geometric construction devised by Peter Kenen

Under the conditions postulated in our model, however, it is doubtful whether our complementary manufactures should use factors in such unequal proportions that slight deviations of the actual market equilibrium from the Pareto optimum in favour of one good or another would generate enough new investments to justify the move.[1] Moreover, the kind of oscillating movement around the Pareto growth path that proponents of unbalanced growth have envisaged presupposes that a move away from the path in one direction would eventually be followed by a move in the other direction, crossing the path. Once a move had been made in favour of the more capital-intensive of the two goods, there would be no force to push output back toward the labour-intensive good. Systematic government support of the capital-intensive good would merely swing the growth path toward specialization in that good.

Albert Hirschman's notion of unbalanced growth deserves more careful consideration. He argues as follows:

> The balanced growth that is revealed by two still photographs taken at two different points in time is the end result of uneven advances of one sector followed by the catching of other sectors. . . . The advantages of [a] seesaw advance over 'balanced growth', where every activity expands perfectly in step with every other, is that it leaves considerable scope to *induced* investment decisions and therefore economizes . . . genuine decision-making.[2]

Within the framework of our model, we may interpret Hirschman's unbalanced growth in two ways: (1) The economy moves along Pareto-optimal points which follow a seesaw pattern through time; or (2) the economy oscillates around a Pareto-optimal balanced growth path: one disequilibrium follows another, but an optimal balance is achieved at intervals.

1. For seesaw growth to be Pareto-optimal, increments in productive capacity must come in large, indivisible packages; such a growth pattern would admit of little or no substitution between variable factors and capital. This can readily be seen in Fig. 4 below where the actual growth sequence has been represented by a series of steps, while the balanced-growth path has been indicated by a dotted line.

At $O$, the economy was capable of expanding to $A$ or to $A'$. Once $A$ had been elected, the choice in the next period would be between $B$ and $B'$, and in the following period between $C$ and $C'$. These corner-shaped transformation curves are conceivable only if variable factors have a zero

('Distribution, Demand, and Equilibrium in International Trade: A Diagrammatic Analysis', *Kyklos*, xii, No. 4, p. 632).

[1] Note, however, that in a more comprehensive model, which would take into account the stimulation of investments through foreign trade and through the entire chain of 'backward' and 'forward' linkages relating the different sectors of the economy, the theory might have more substance.

[2] *The Strategy of Economic Development*, Yale University Press, 1958, p. 63.

marginal productivity: the only input in these two processes must be physical capacity, else the possibility of shifting variable factors from one product to the other would have imparted some flexibility to the curves—and the chances are that a more balanced output-mix would have been

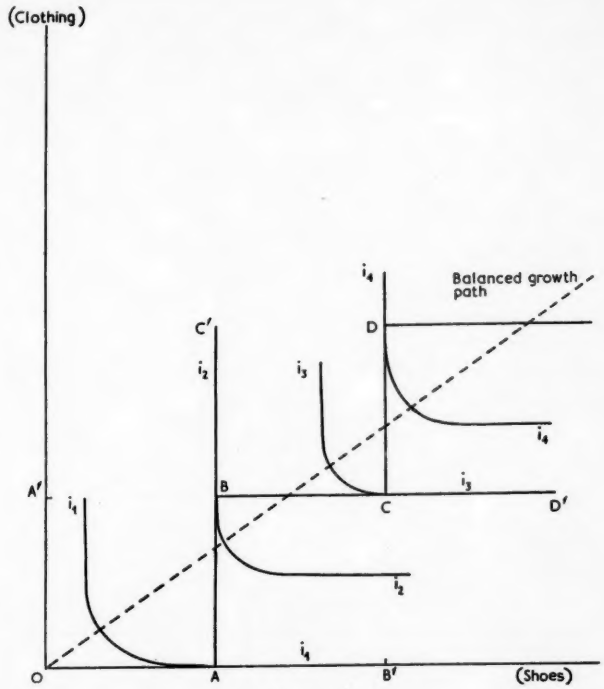


FIG. 4.

optimal in any given period. It is also to be noticed that in a free-enterprise system—where induced decision-making really matters—production at *A*, *B*, *C*, and *D* would be entirely unprofitable. Entrepreneurs would wish to discriminate between customers or to curb their output short of capacity and charge a uniform price corresponding to the slope of an indifference curve crossing the transformation line (i.e. between *A* and *B* or *B* and *C*). The resulting outputs would again come closer to balance than if total capacity (produced at zero marginal cost) had been sold at a negligible price or given away. If prices were allowed to fall even close to the marginal-cost level there might not be sufficient profits or rents on capital to invest in the following period to reach a higher stage of development.

2. The other version seems at first glance even less prepossessing. How

can investments be induced by deviations from the Pareto path when it is more than likely that the total profits (and the percentage yields on capital) accruing to entrepreneurs over time will be maximized if the economy travels along this path ?[1]

This thesis holds up under rather special, but perhaps not unrealistic,

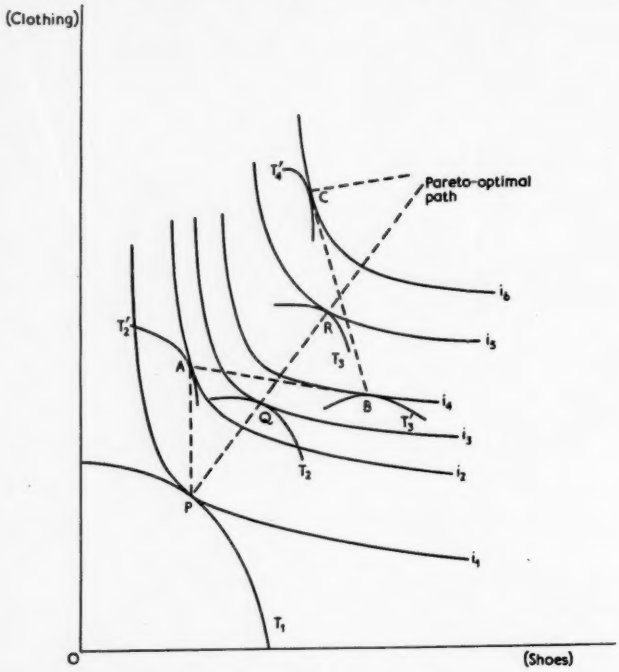


FIG. 5.

assumptions: suppose, to take an extreme case, that the threshold of response to monetary incentives was so high in an underdeveloped country that it took a 30 per cent. or greater yield on investments to attract funds from landlords or from mercantile interests. Yet the yield that could be earned on investments if the economy stuck to the Pareto path might average as low as 10 per cent. Then the economy, at least in a framework of free enterprise, could not expand in the optimal direction for lack of a sufficient supply of investment funds; but it might still be able to follow a more circuitous path toward the optimum balance. This situation is represented in Fig. 5, which is again limited to clothing and shoes, the third commodity—food—being conceived to remain in the background.

[1] It is assumed of course that factor proportions do not differ sufficiently among manufacturers to make such deviations profitable (at the expense of returns to other factors).

The economy starts out at a Pareto optimum $P$, on the short-run transformation curve $T_1$, but instead of going on to $Q$ on $T_2$, it is 'pushed' by government intervention toward point $A$ on $T_2'$. Transformation curves $T_2$ and $T_2'$ adhere to the same envelope: they both can be reached with available resources. At $A$, it is probable that the yield on clothing investments will be less than 10 per cent. (leaving out of account possible subsidies from the government). But the first few units of shoes production will now yield a high return (i.e. larger than 30 per cent.), since complementarity in demand will have made shoes relatively scarcer at $A$ than at $P$ or at $Q$. (This is suggested by a comparison of the slopes of the indifference curves at $A$, $P$, and $Q$.)[1] If the gestation period of investments were very short and investors could regularly revise their decisions in the light of returns actually received, one might expect that the strong inducement to invest would abate once enough shoes had been produced to meet the 'complementary demand'. But an investment boom may have been set off by the high initial returns at $A$, and more long-term investment funds may have been attracted by the high prospective yields than the situation objectively called for. If the gestation period is long enough and the psychology of investors operates in this particular way, the equilibrium may move across the Pareto path (to point $B$). Once the dust has settled, it will become apparent that losses have been sustained (or excessively small profits earned) by marginal investors in the production of shoes, but by this time conditions will be ripe for a boom in clothing, and the first investments in this direction will again yield extraordinary profits. In this seesaw manner, the economy may proceed to $C$ and beyond.[2]

It may be objected that if investors were rational, they would learn after a time that speculative ventures of this kind did not pay. But this depends on their attitude toward risk. Investors may prefer a statistical expectation of an 8 per cent. yield with odd chances of making a large fortune than a steady return of 10 per cent. with no chances of making enough money to climb to a higher social class and to a new way of life.[3]

[1] *Strictu sensu* complementarity cannot be depicted in a two-dimensional diagram (the substitution of clothing for food must raise the relative marginal utility of shoes with respect to food). What we have here is strong non-substitutability, which is a close parent of complementarity.

[2] If we were to draw the envelope to $T_2$ and $T_2'$, and to other transformation curves belonging to the same time period, we should find that it would cross indifference curve $i_2$ somewhere above $A$. In so far as this envelope tended to reflect the long-run (relative) costs of expanding the output of shoes and clothing, it would be readily apparent from the diagram that an overexpansion of clothing output had taken place at $A$. For, if investment decisions had been subject to frequent revisions, investors would have been induced to shift funds to the shoes industry, since the long-run costs of moving in that direction would have been lower than the short-run marginal costs (measured by the slope of $T_2'$ at $A$) and hence lower than prevailing prices (also determined by the slope of $T_2'$).

[3] The utility-of-income function of investors would then have to show an upward concavity in the relevant range.

In the early stages of development, where feudal and other social fetters tend to impede the rise of new social classes, such an attitude might make a good deal of sense.

For this mechanism to keep on going, once set in motion, it is essential that investment projects show high initial returns to attract fresh investment funds. At the same time their gestation period must be long enough so that, once funds have been invested in the industry, they must remain tied up in it even after declining profits have set in. Perhaps the best way to reconcile these two conditions is to think of the first profits accruing to the few entrepreneurs who owned assets in the industry prior to the boom expansion in the industry's capacity. It is also important that commodities involved in this uneven advance should be strongly complementary in demand; otherwise an increase in the production of one will not necessarily increase the profitability of producing the other. It may seem paradoxical that strong complementarity, which normally governs growth along Nurksian assumptions, may also tend to unbalance the path along which this growth may most easily be achieved.

## V. Conclusions and Policy Recommendations

The planners of a country bent on economic development might try and answer the following questions before formulating their long-run policy: (1) In the light of available information, would growth along a Pareto-optimal path during the plan period entail specialization in a few industries or the balanced development of the nation's productive forces? (2) Would market pressures normally tend to prod the economy along this optimal path? (3) Might there be grounds for deviating from this path for more or less protracted periods?

My first conclusions are aimed at predicting the trend of the Pareto-optimal path, for certain properties of the nation's production and consumption functions, on the assumption that the $n$-commodity real world can be reduced in a meaningful way to the two- and three-commodity schemes set forth in earlier sections.

1. In countries close to the subsistence level, where handicrafts and primitive manufactures are characterized by constant or increasing costs, the profitable establishment of new industries, at least in the absence of foreign trade, is a natural consequence of increased productivity, of the growing availability of resources, and of the high and increasing income elasticity of consumption of manufactures. At very low levels of income, diversification of output may also be a consequence of the opening of trade (e.g. exports of handicrafts and luxury foodstuffs).

2. As long as increasing costs are expected to prevail in all directions, before and after a change in the supply of resources capable of moving the

transformation surface outwards, balanced growth is most likely to be Pareto-optimal. International trade may change the location of the optima, but it is unlikely to shift the path to complete specialization, especially if the country faces foreign markets with a limited absorption capacity.

3. Under decreasing-costs assumptions, a country faced by an inelastic demand for its exports may in certain cases find diversification Pareto-optimal. These two conditions will rarely be encountered simultaneously, since a country accounting for a large enough share of the world market for any commodity to be faced by such an inelastic demand should be able to afford several optimum-size plants; if this is the case, the aggregate transformation curves would exhibit constant or increasing costs rather than decreasing costs.

4. In small underdeveloped countries there are good chances that increasing returns to manufactures will prevail and that elasticities of demand in foreign trade will be high. Specialization would then be optimal. The long-run acquisition of skills resulting from specialization would reinforce the benefits to be derived from such a policy.

Under free-trade conditions, the market system can be relied upon to inform entrepreneurs of the profits that can be earned from investments in industries with an export potential. If exchange rates are set unrealistically, if capital markets operate under artificial restraints or if the supply cost of agricultural labour exceeds the value of its marginal product, money costs may diverge from opportunity costs, and the market may steer the economy away from its Pareto-optimal path. These defects, wherever possible, should be corrected by specific action aimed at removing these impediments rather than by tampering with the price system.[1]

Certain lumpy investments in increasing-returns industries might be discouraged if enterprises were forced to equate marginal costs with average revenue; but if discrimination and output restriction are sanctioned by the state in the infant-growth stage of these industries, profits in these lines may be sufficiently high to attract investors.

The advantages of diversified long-term investments to meet complementary domestic demands at some future date—when the productivity of resources and the real income of the population will have increased sufficiently to make the production of such goods profitable—may not be

[1] Where the money cost of labour is thought to differ from its real cost, land taxes designed to absorb a part of the average product consumed on the family farm should help to squeeze excess manpower out of the agricultural sector and to press it into more productive occupations. The enclosure movement in the eighteenth century achieved the same effect. If these measures are deemed excessively inhuman, then the divergence between money and 'real' costs is perhaps not so great after all. These differences are often exaggerated because the psychological and social obstacles to movement out of agriculture are (unjustifiably) left out of the general social welfare function imputed to underdeveloped countries.

evident to potential investors. A built-in market bias against this type of investments may have to be corrected by government action. There will be less—if any—need for corrective action if the country is open to international trade and elastic demand conditions prevail in foreign markets.

We concluded in section IV that Hirschman's technique for coaxing out investment funds from reluctant investors might justify temporary deviations from the Pareto path (granted the risk preference on the part of investors that this theory implies). In the real world, of course, the seesaw movement would not be confined to two or three commodities: new products would become profitable after each new boom in a never-ending chain of complementarities.[1] Government development of highways, railroads, and other infra-structure beyond the capacity which the momentary state of demand for these facilities would appear to warrant might be the most effective way to call forth desirable ancillary investments in commercial and industrial projects. Even if we grant the general validity of Hirschman's thesis, we should hesitate to invoke it as justification for subsidizing consumer manufactures with the aim of bringing about a self-perpetuating seesaw movement: such subsidies would be difficult to administer fairly and would too readily be subject to abuse.

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[1] It would be desirable to test Hirschman's thesis about induced investments before it is allowed to influence planning practice. A preliminary step toward such a test would be to check on the seesaw pattern itself. This might be done by correlating time series of output of pairs of complementary commodities in countries that have undergone rapid economic development and seeing whether the correlation could be significantly improved by lagging one of the two series by a period roughly equal to the gestation of its investments. (All series would of course have to be adjusted for cyclical fluctuations.)

# CYCLICAL FLUCTUATIONS AND ECONOMIC GROWTH

*By* H. NEISSER

In the June 1960 issue of the *Oxford Economic Papers*, Mr. Pasinetti concludes (p. 228): '. . . on the one hand, the macro-economic models which provide a cyclical interpretation of the economic activity cannot give any explanation of economic growth, and on the other hand, those theories which define, or rely on, the conditions for a dynamic equilibrium to be reached and maintained cannot give an explanation of business cycles.' It would lead too far to discuss here the second half of this statement. The first half is certainly true for models which can be presented in the form of a *second*-order difference or differential equation, but not for those of higher order. Consider the solution of the characteristic equation of a third-order difference equation:

$$y(t) = z_1 R_1^t + z_2 R_2^t + z_3 R_3^t.$$

The arbitrary constants $z_1$ can very well be different from zero, the first root $R_1$ may be real (and larger than unity), the two other roots conjugate-complex. The appearance of more than two time lags is suggested for the consumption function by the material in M. Friedman, *A Study of the Consumption Function*, p. 147, and for the accelerator hypothesis by the material in vol. 19 of the *Studies in Income and Wealth* (*NBER*), p. 459. The well-known fact that in multi-sectoral models both growth and cyclical fluctuations are visible in the solution, is best understood if one realizes that a low-order system of difference equations is reducible, in principle, to a higher order system of fewer equations.

New York

# CYCLICAL FLUCTUATIONS AND ECONOMIC GROWTH: A REPLY TO MR. NEISSER

*By* L. L. PASINETTI

Mr. Neisser is dealing with two different problems.

In the first part of his note he suggests that I could not have made the criticism he quotes had the trade cycle and growth theorists framed their models in terms of equations involving many time-lags so as to obtain difference equations with more than two roots (some of which might be real and others complex).

Now, the reason why models of this type have not been developed seems to me that they would be even more artificial than those with two roots, because of the very particular values of the coefficients on which they would have to be based. In other words, one should rely on a fluke to make the equations produce the wanted movement in time. Pushing this procedure to the extreme, one can always—given any observed time path—introduce enough variables in the equations so as to obtain a perfect fit, by finding out the appropriate particular values of the parameters. But, of course, this is pure description and no explanation.[1] The problem we are facing here is to build a model which is capable in its general form of explaining cyclical growth. Unfortunately, even a third order (or any higher order) difference equation is of no help for this purpose. In the general case, the solution would normally contain one root which dominates all the others and which again would eventually lead either to growth or to fluctuations.

At the end of his note, Mr. Neisser makes quite a different suggestion, namely that cycles and growth might better be studied with the help of multi-sectoral models. I entirely agree: as a matter of fact, this was the conclusion of my paper and I am surprised at Mr. Neisser hinting at this point! I added something more, namely that we cannot merely repeat on

[1] In a paper recently published in this journal (Oct. 1960), Kenneth K. Kurihara has given a splendid example—it seems to me—of a purely descriptive formulation presented as an explanation. After defining and drawing graphically a Harrod–Domar equilibrium path, he sets a cycle around it. Then he says, in mathematical symbols, that in booms investments are such as to make $\Delta I > g'\Delta K$, and in slumps such as to make $\Delta I < g'\Delta K$ ($\Delta I$ = increment of demand for investment, and $g'\Delta K$ = increment of productive capacity). This, of course, is all right but trivially obvious. It amounts to nothing more than saying, in a different way, that there are fluctuations of investments, while the basic problem is not to say that $\Delta I$ is $>$ or $<$ than $g'\Delta K$, namely that there are fluctuations, but to explain them, namely to explain why there should be any inequality of that type to begin with.

a sectoral scale the same models which have been used for the economy as a whole, unless we are prepared to leave technical progress out of our analysis (as, for example, Professor Leontief has done in his dynamic system). If we do consider technical progress, then the mere introduction of it in an economic model means non-proportional (i.e. non-exponential) growth for each sector, even if growth might be proportional for the economy as a whole.

Nuffield College, Oxford

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